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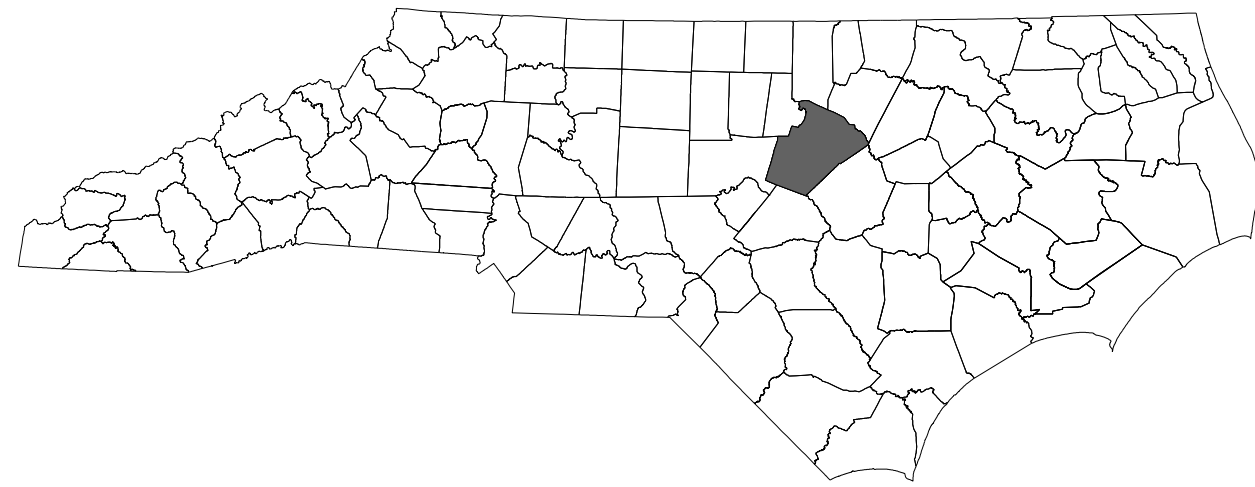
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09.08/19

SYTIME\$\$\$\$\$DON\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT: 17BP.5.H.4

CONTRACT: DE00233

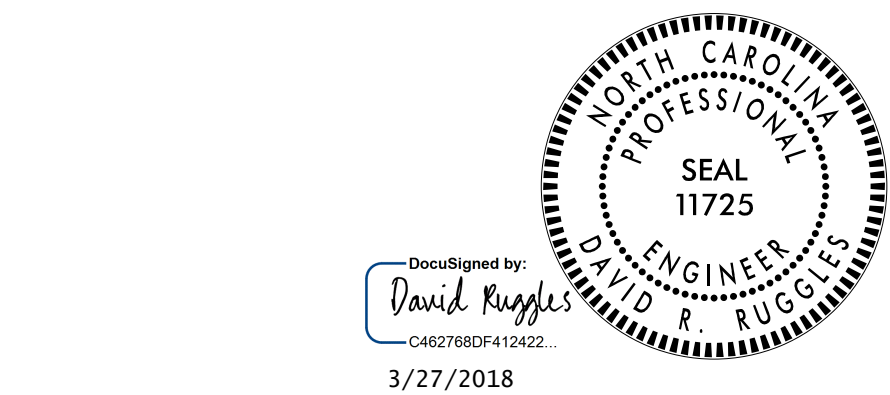
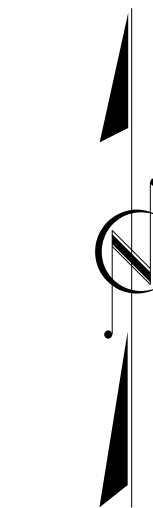
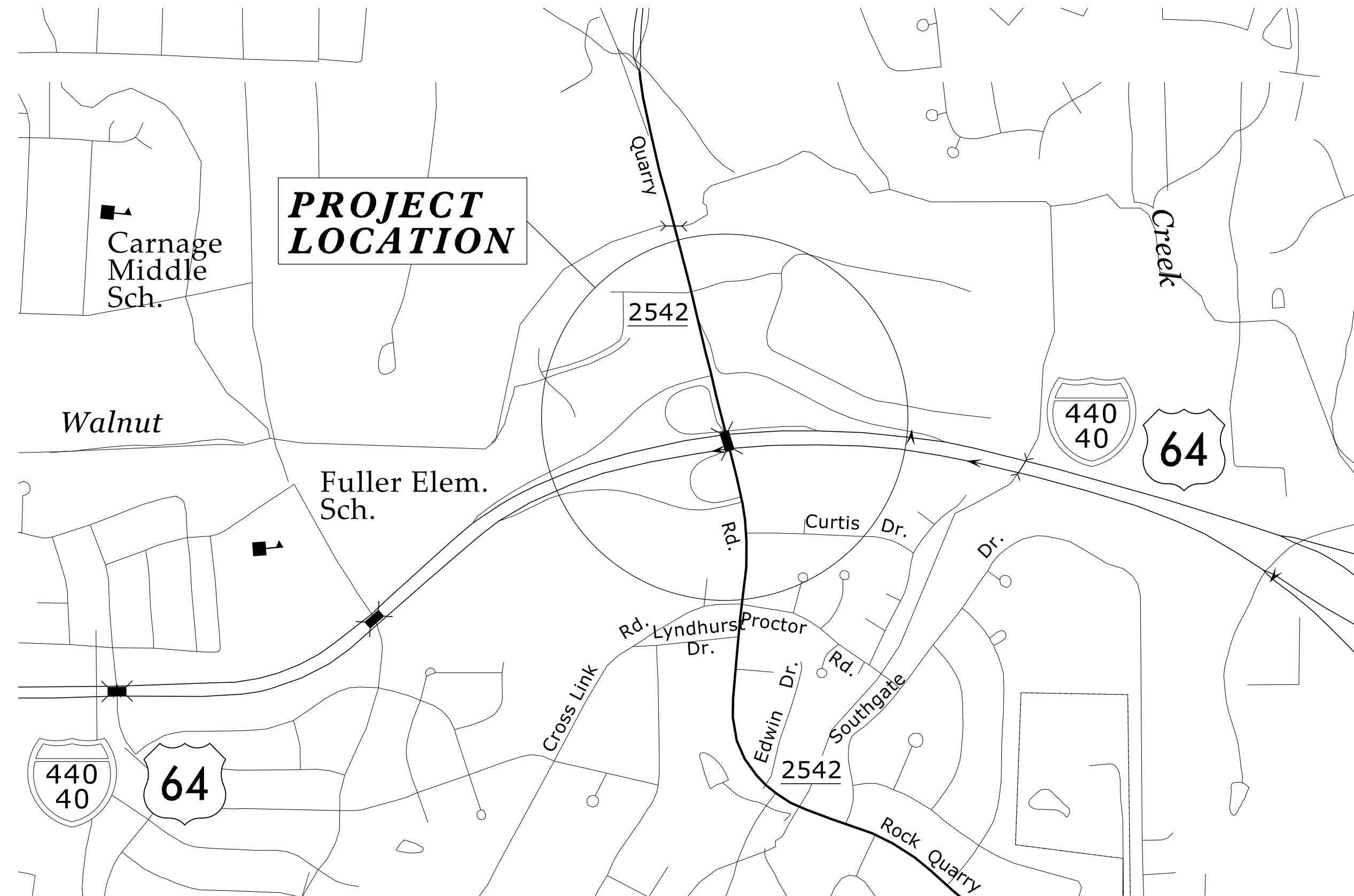


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

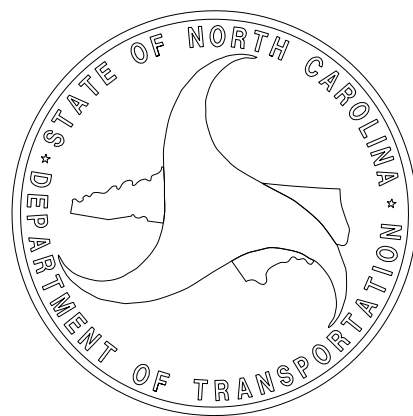
WAKE COUNTY

LOCATION: BRIDGE #316 ON SR 2542 (ROCK QUARRY RD.) OVER I-40/I-440

TYPE OF WORK: BRIDGE PRESERVATION - DECK REHABILITATION BY SCARIFYING, SHOT BLAST CLEANING AND PLACEMENT OF POLYESTER POLYMER CONCRETE OVERLAY, DECK GROOVING, REMOVAL AND RECONSTRUCTION OF BRIDGE DECK JOINTS, INSTALLATION OF SILICONE JOINT SEALS AND MOLDED RUBBER SEGMENTAL EXPANSION JOINTS, SUBSTRUCTURE REPAIR USING SHOTCRETE AND EPOXY RESIN INJECTION, PAINTING STRUCTURAL STEEL, MILLING AND ASPHALT OVERLAY, BRIDGE JACKING, CAP DEMOLITION AND SEAT REPAIR, AND ELASTOMERIC BEARINGS



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UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA  
BRIDGE # 316 - ADT 2015 = 27,000

PROJECT LENGTH  
BRIDGE # 316 - 0.056 MILE

Prepared in the Offices of:



STEWART

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RALEIGH, NC 27601  
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www.stewartinc.com  
PROJECT # H16016.00

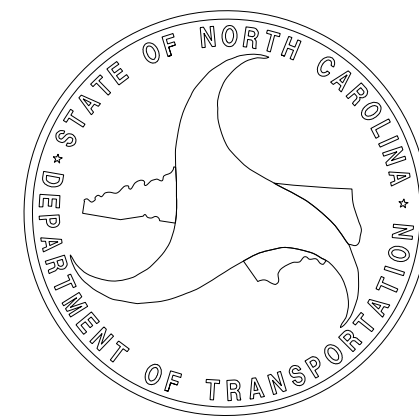
2018 STANDARD SPECIFICATIONS

LETTING DATE:  
APRIL 25, 2018

DAVID RUGGLES, PE  
PROJECT ENGINEER

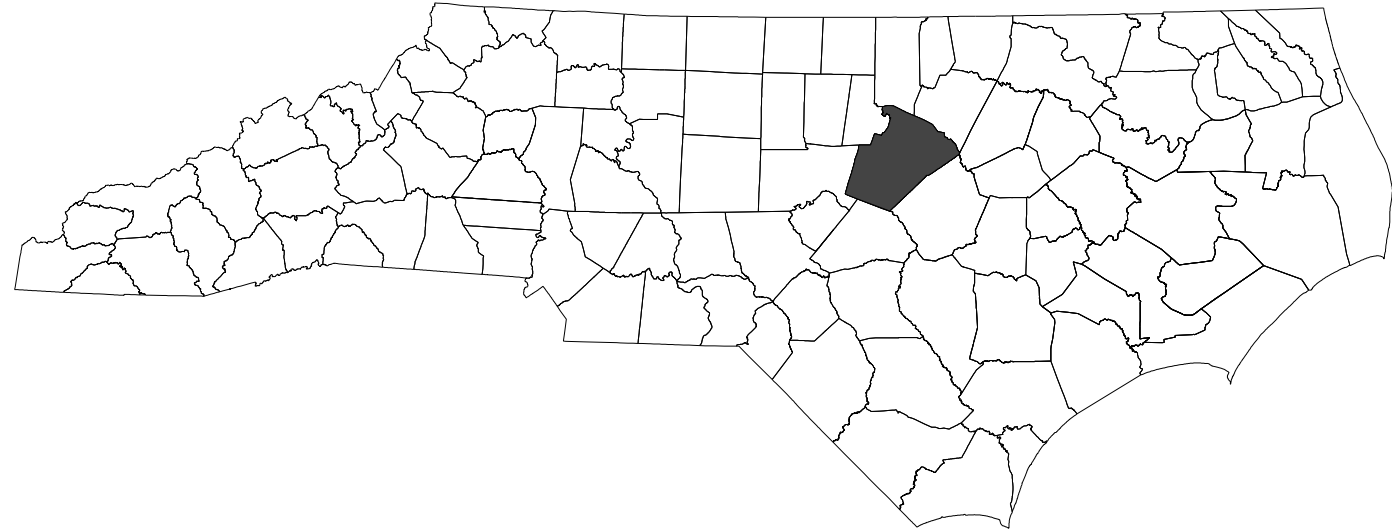
JEFF LOFTUS, PE  
PROJECT DESIGN ENGINEER

LISA GILCHRIST, EI  
NCDOT CONTACT



PROJECT: 17BP.5.H.4

CONTRACT: DE00233



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: BRIDGE #316 ON SR 2542 (ROCK QUARRY RD.) OVER I-40/I-440.

TYPE OF WORK: BRIDGE PRESERVATION - DECK REHABILITATION BY SCARIFYING, SHOT BLAST CLEANING AND PLACEMENT OF POLYESTER POLYMER CONCRETE OVERLAY, DECK GROOVING, REMOVAL AND RECONSTRUCTION OF BRIDGE DECK JOINTS, INSTALLATION OF SILICONE JOINT SEALS AND MOLDED RUBBER SEGMENTAL EXPANSION JOINTS, SUBSTRUCTURE REPAIR USING SHOTCRETE AND EPOXY RESIN INJECTION, PAINTING STRUCTURAL STEEL, MILLING AND ASPHALT OVERLAY, BRIDGE JACKING, CAP DEMOLITION AND SEAT REPAIR, AND ELASTOMERIC BEARINGS

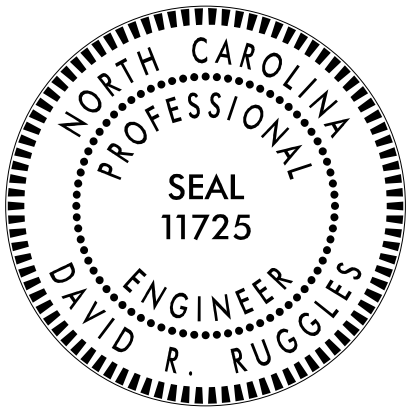
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.H.4	2	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.5.H.4		PE	
5BPR.3.1		CONST	

INDEX OF SHEETS

1	TITLE SHEET
2	INDEX OF SHEETS
3	DRAINAGE SUMMARY
4 - 4A	ROADWAY PLANS
S-1 - S-25	BRIDGE #316 STRUCTURAL PLANS
SN	STRUCTURAL STANDARD NOTES

DocuSigned by:  
David Ruggles  
C462768DF412422...

3/8/2018



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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.**

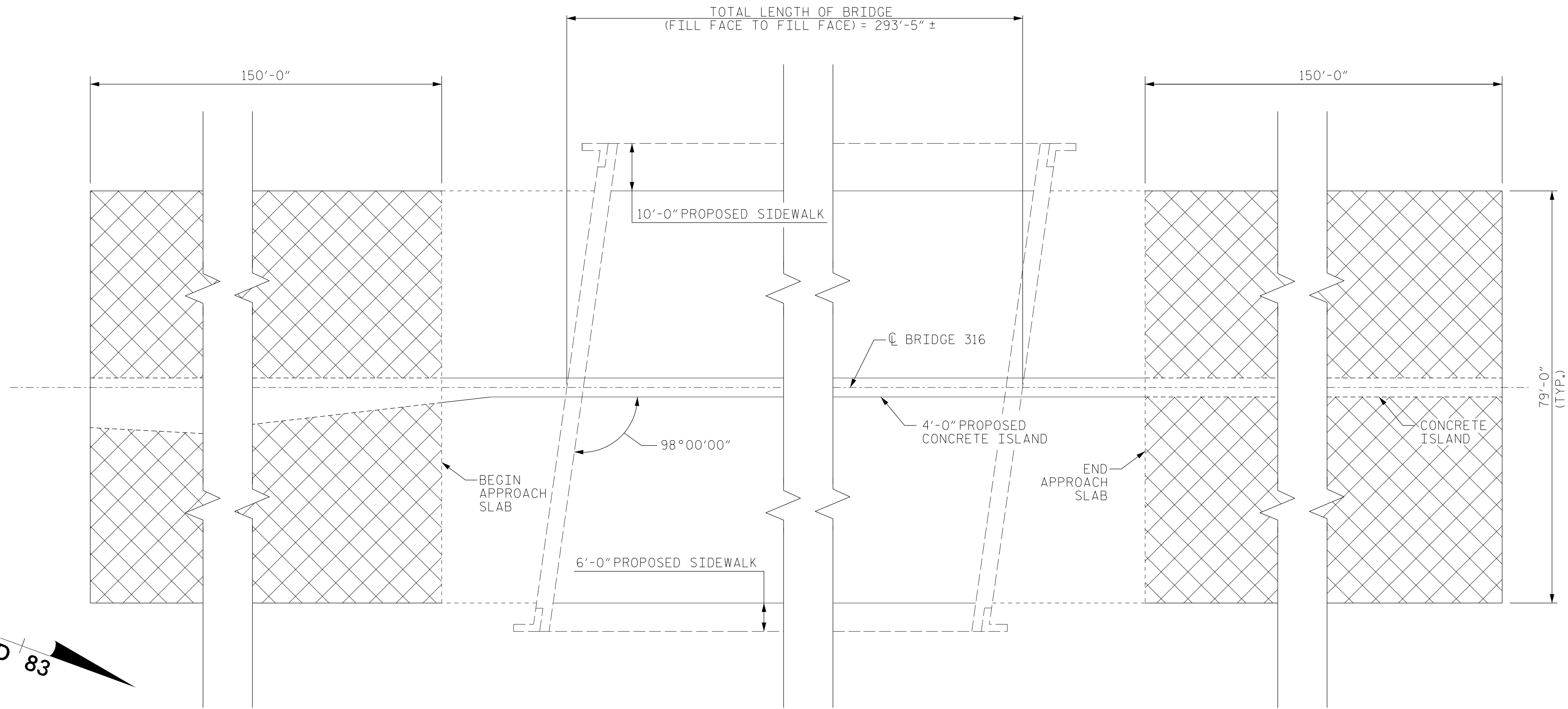
***LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)***

[illegible]

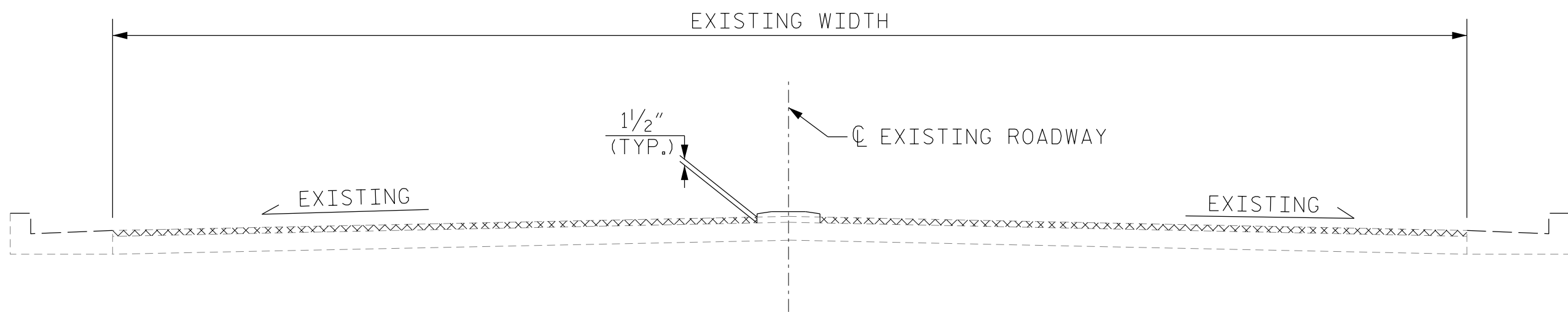


BEGIN	2-6" CONC. C&G
BEGIN	6' SIDEWALK

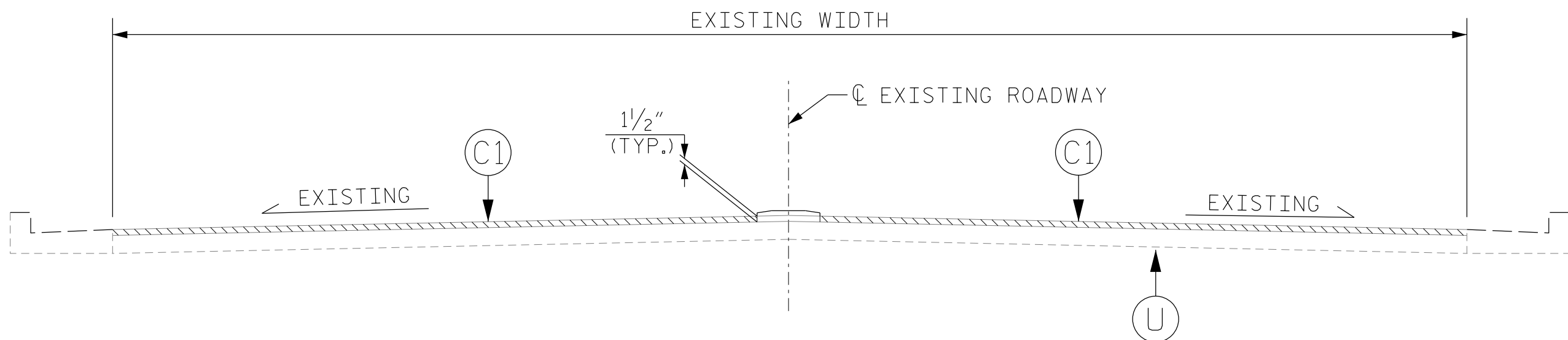
3/8/2018  
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USER:default



PLAN



TYPICAL ROADWAY MILLING SECTION



TYPICAL ROADWAY SECTION



MILLING

C1	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF 9.5B AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.
U	EXISTING PAVEMENT

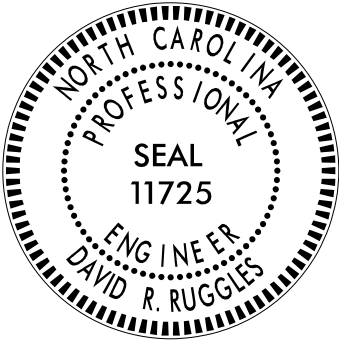
NOTES:  
EXISTING APPROACH ASPHALT PAVING TO BE MILLED AS NECESSARY TO ATTAIN MINIMUM 1 1/2" DEPTH TO ACCOMMODATE NEW ASPHALT PAVING. PROVIDE SMOOTH TRANSITION TO EXISTING ROADWAY AND TO BRIDGE APPROACH SLABS.

SUMMARY OF QUANTITIES

	ESTIMATE	ACTUAL
MILLING	2410 SQ. YDS.	
ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	250 TONS	

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

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David Ruggles  
C462768DF412422...  
3/8/2018



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Raleigh, NC 27601  
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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
APPROACH MILLING  
AND OVERLAY

REVISIONS						SHEET NO. 4A
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: E. PHELPS DATE: 06-17  
CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

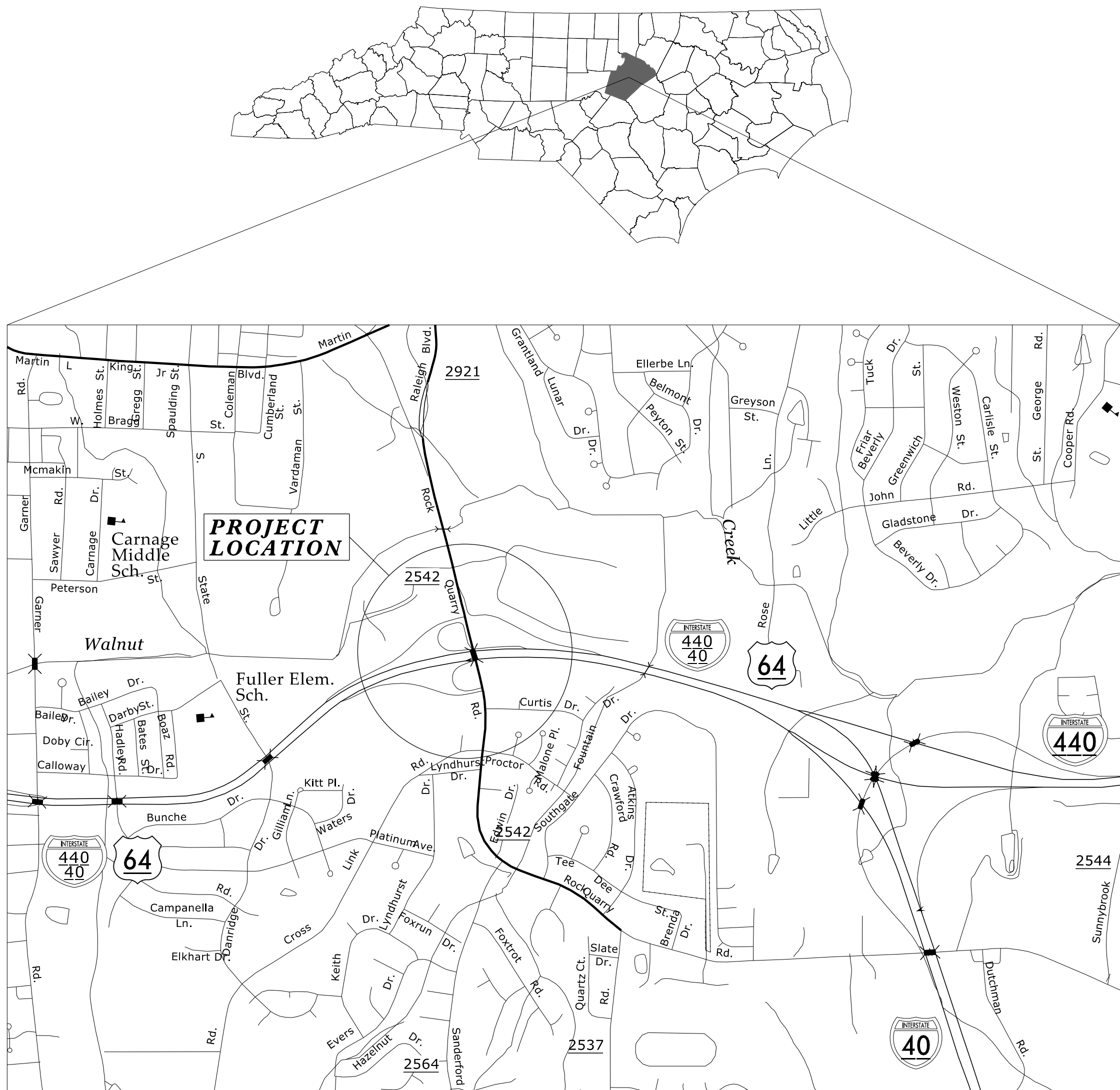
3/8/2018  
WAKE\_316  
USER:ephelps  
...\\026\_RockQuarryRehab\_ApproachMilling.dgn



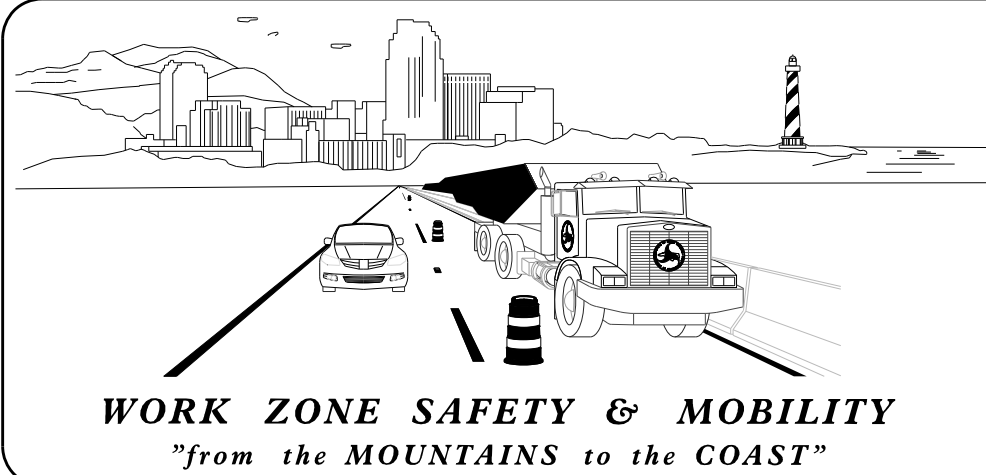
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WAKE COUNTY

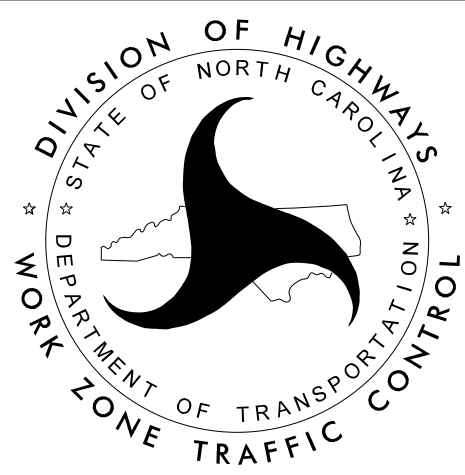


LOCATION: BRIDGE #316 ON SR 2542 (ROCK QUARRY RD.) OVER I-40/I-440  
TYPE OF WORK: BRIDGE REHABILITATION



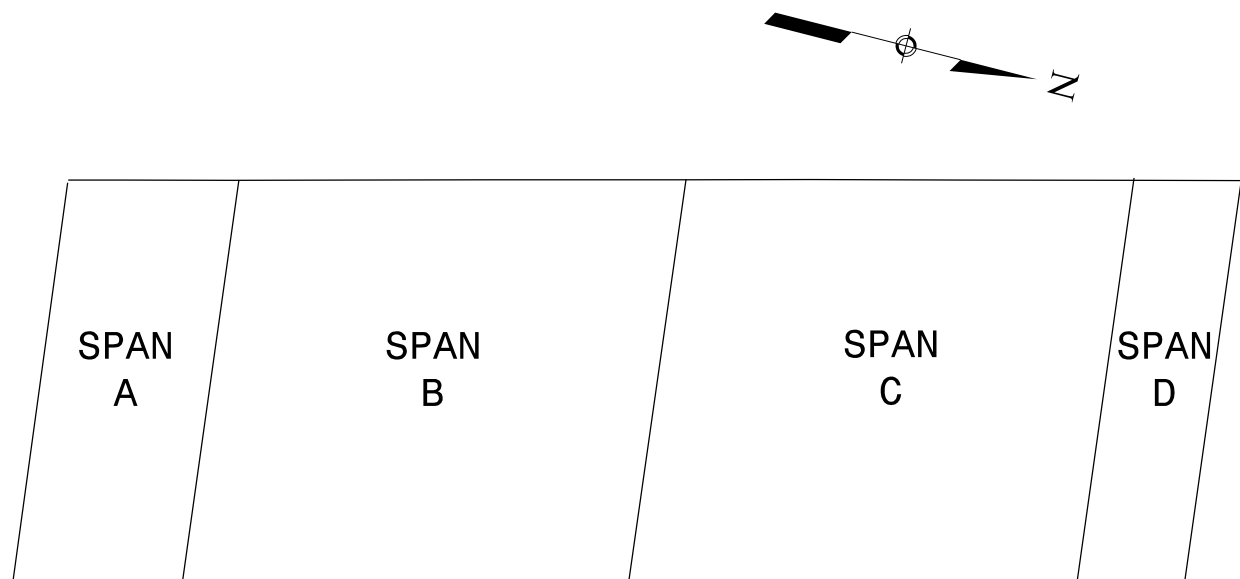
N.C.D.O.T. WORK ZONE TRAFFIC CONTROL  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 814-5000 FAX: (919) 771-2745

JOSEPH HUMMER, PE STATE TRAFFIC MANAGEMENT ENGINEER  
TRAFFIC CONTROL PROJECT ENGINEER  
MICHAEL STEELMAN TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
TRAFFIC CONTROL DESIGN ENGINEER



INDEX OF SHEETS

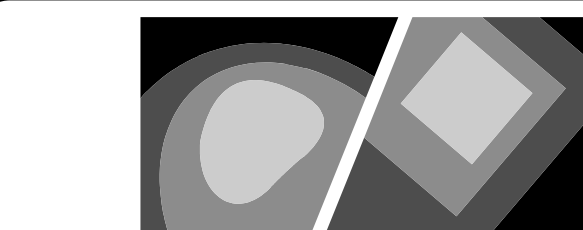
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, PAVEMENT MARKING SCHEDULE AND MANAGEMENT STRATEGIES
TMP-1B	GENERAL NOTES
TMP-2	NORTHBOUND CUT SECTIONS PHASE I THRU III
TMP-2A	SOUTHBOUND CUT SECTIONS PHASE IV THRU V
TMP-2B	CUT SECTIONS PHASE VI THRU VIII
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4 TO TMP-5	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-6 TO TMP-7	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-8 TO TMP-9	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL
TMP-10 TO TMP-12	TEMPORARY TRAFFIC CONTROL PHASE IV DETAIL
TMP-13 TO TMP-14	TEMPORARY TRAFFIC CONTROL PHASE V DETAIL
TMP-15 TO TMP-16	TEMPORARY TRAFFIC CONTROL PHASE IV.A DETAIL
TMP-17 TO TMP-19	TEMPORARY TRAFFIC CONTROL PHASE V.A DETAIL
TMP-20 TO TMP-21	TEMPORARY TRAFFIC CONTROL PHASE VI
TMP-22 TO TMP-23	TEMPORARY TRAFFIC CONTROL PHASE VII DETAIL
TMP-24 TO TMP-25	TEMPORARY TRAFFIC CONTROL PHASE VIII DETAIL



SPAN DESIGNATIONS

DAVID RUGGLES, PE TRAFFIC CONTROL PROJECT ENGINEER  
ELIZABETH PHELPS, EI TRAFFIC CONTROL PROJECT DESIGN ENGINEER

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www.stewartinc.com  
PROJECT #: B11001

APPROVED: David Ruggles  
DATE: 1/5/2018

SEAL



SHEET NO.  
TMP-1

17BP.5.H.4

PROJECT:



\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

## ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES

## MANAGEMENT STRATEGIES

THE OBJECTIVE OF THIS PROJECT IS TO COMPLETE THE REHABILITATION OF THE HIGH VALUE BRIDGE #316 OVER I-40/I-440 ON SR 2542 (ROCK QUARRY RD) USING A SERIES OF NIGHT TIME LANE CLOSURES.



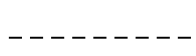


THE CONTRACTOR WILL ESTABLISH A PLAN OF ACTION / SEQUENCE OF CONSTRUCTION TO COMPLETE THE REHABILITATION AND UTILIZE THE PROVIDED LANE CLOSURES AS DESIRED.

NOTE: THE TIME RESTRICTIONS MAY VARY WITH EACH LANE CLOSURE.

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.H.4	TMP-1A

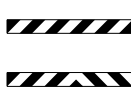





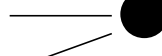


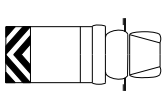

## LEGEND

### GENERAL




	DIRECTION OF TRAFFIC FLOW
	DIRECTION OF PEDESTRIAN TRAFFIC FLOW
	EXIST. PVMT.
	NORTH ARROW
	PROPOSED PVMT.

	WORK AREA
	REMOVAL


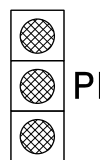
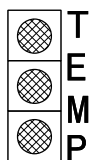
### TRAFFIC CONTROL DEVICES

	BARRICADE (TYPE III)
	CONE
	DRUM
	SKINNY DRUM
	TUBULAR MARKER
	TEMPORARY CRASH CUSHION
	FLASHING ARROW BOARD (TYPE C)
	FLAGGER
	LAW ENFORCEMENT
	TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
	CHANGEABLE MESSAGE SIGN

### TEMPORARY SIGNING

	PORTABLE SIGN
	STATIONARY SIGN
	STATIONARY OR PORTABLE SIGN

### SIGNALS

	EXISTING
	PROPOSED
	TEMPORARY




### PAVEMENT MARKINGS

	EXISTING LINES
	TEMPORARY LINES

### PAVEMENT MARKING SYMBOLS

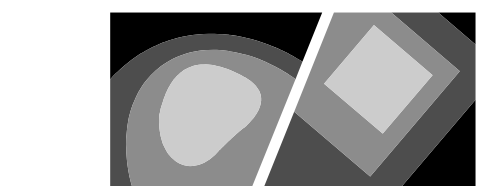
	PAVEMENT MARKING SYMBOLS
---	--------------------------

### PAVEMENT MARKERS

	CRYSTAL/CRYSTAL
	CRYSTAL/RED
	YELLOW/YELLOW

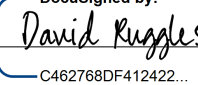
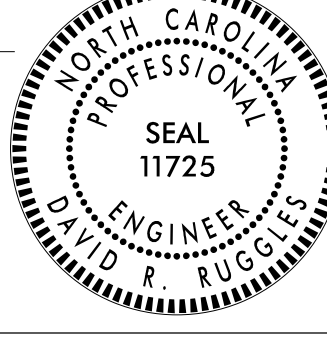
### TEMPORARY PAVEMENT MARKING SCHEDULE

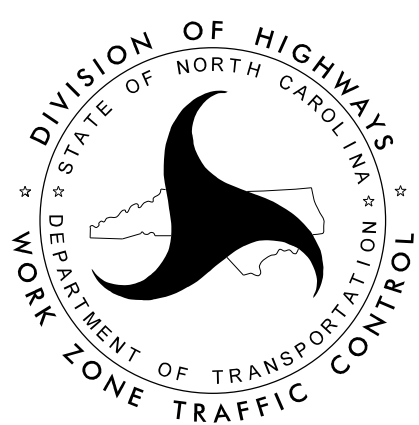
SYMBOL	DESCRIPTION	PAY ITEM
TEMPORARY PAVEMENT MARKING LINES		PAINT (4")
P8	2 FT - 6 FT/SP WHITE MINISKIP	
PB	YELLOW EDGELINE	
PC	10 FT WHITE SKIP	
PD	3 FT - 9 FT/SP WHITE MINISKIP	



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TRANSPORTATION  
MANAGEMENT PLAN

ROADWAY STANDARD  
DRAWINGS, LEGEND,  
PAVEMENT MARKING SCHEDULE  
& MANAGEMENT STRATEGIES



\$\$\$\$\$SYSTIME\$\$\$\$\$  
\$\$\$\$\$\$\$\$\$\$DON\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.H.4	TMP-1B

## GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESired OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

### TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
SR 2542 SB (ROCK QUARRY RD) -CLOSE ONE LANE, TWO LANES OPEN	4:00 P.M. - 6:00 P.M. MONDAY THRU FRIDAY
SR 2542 SB (ROCK QUARRY RD) -CLOSE TWO LANES, ONE LANE OPEN	7:00 A.M. - 10:00 P.M. MONDAY THRU FRIDAY 10:00 A.M. - 10:00 P.M. SATURDAY 10:00 A.M. - 9:00 P.M. SUNDAY
SR 2542 NB (ROCK QUARRY RD) -CLOSE ONE LANE, ONE LANE OPEN RAMP C (I-40 EB) -CLOSE ONE TURN LANE	6:00 A.M. - 10:00 P.M. MONDAY THRU FRIDAY 9:00 A.M. - 10:00 P.M. SATURDAY 10:00 A.M. - 9:00 P.M. SUNDAY
I-40 -CLOSE ONE LANE	5:00 A.M. - 9:00 P.M. MONDAY THRU FRIDAY 6:00 A.M. - 11:00 P.M. SATURDAY THRU SUNDAY

NB DENOTES NORTHBOUND AND SB DENOTES SOUTHBOUND.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
SR 2542 (ROCK QUARRY RD)
HOLIDAY
1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST TO 10:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 10:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 10:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 10:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 10:00 P.M. THE DAY AFTER INDEPENDENCE DAY.  IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 10:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 10:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 10:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 10:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

### ROAD NAME

I-40

### HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 5:00 A.M. DECEMBER 31ST TO 9:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.

- FOR EASTER, BETWEEN THE HOURS OF 5:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 5:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE DAY AFTER INDEPENDENCE DAY.  
  
IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 5:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 5:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 5:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

- BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:  
  
BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.  
  
BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.  
  
BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

- NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

### TRAFFIC CONTROL DEVICES

- WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- PLACE TYPE II - ADA COMPLIANT PEDESTRIAN BARRICADES (SAFETY RAIL), WITH "SIDEWALK CLOSED" SIGN R9-9 OR 9-11A ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE SIDEWALK.
- PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

### PAVEMENT MARKINGS AND MARKERS

- INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 2542 (ROCK QUARRY RD)	PAINT	N/A

- PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- TRACE THE EXISTING AND PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO REMOVAL AND INSTALLATION. PLACE DRUMS TO DELINEATE ANY EXISTING AND PROPOSED MONOLITHIC ISLANDS AFTER REMOVAL AND BEFORE INSTALLATION

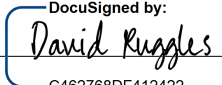
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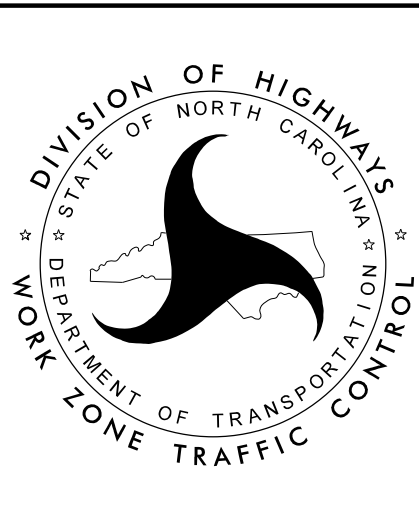
- LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL MAINTAIN SIDEWALK ACCESS AT ALL TIMES AS STATED IN THE PHASING. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY SIDEWALKS (CONCRETE, ASPHALT, OR OTHER SUITABLE MATERIAL AS APPROVED BY THE ENGINEER) AT ALL LOCATIONS WHERE THE OPEN PEDESTRIAN TRAVELWAY HAS BEEN REMOVED FOR CONSTRUCTION OPERATIONS (UTILITIES, DRAINAGE, ETC.).



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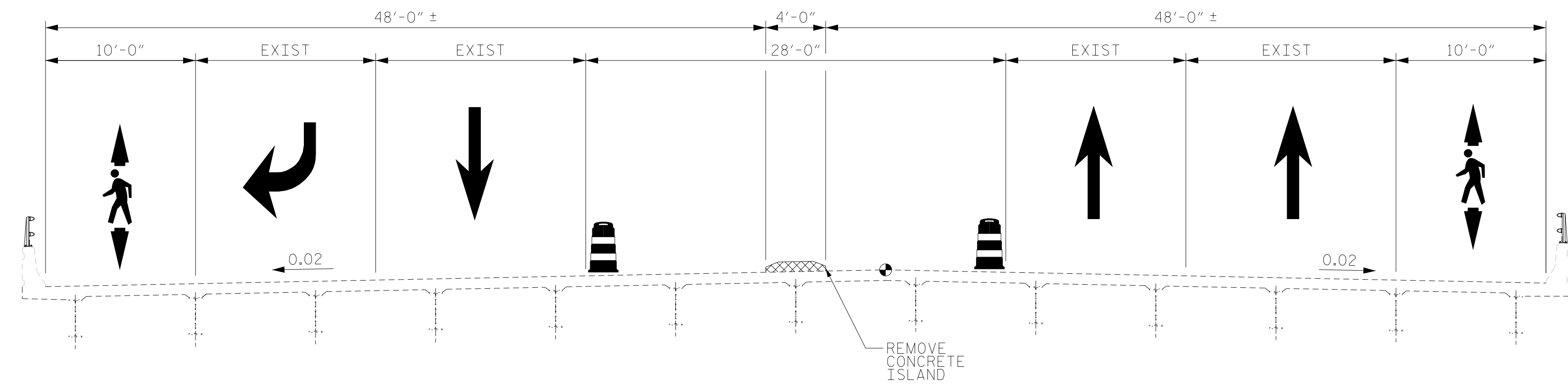
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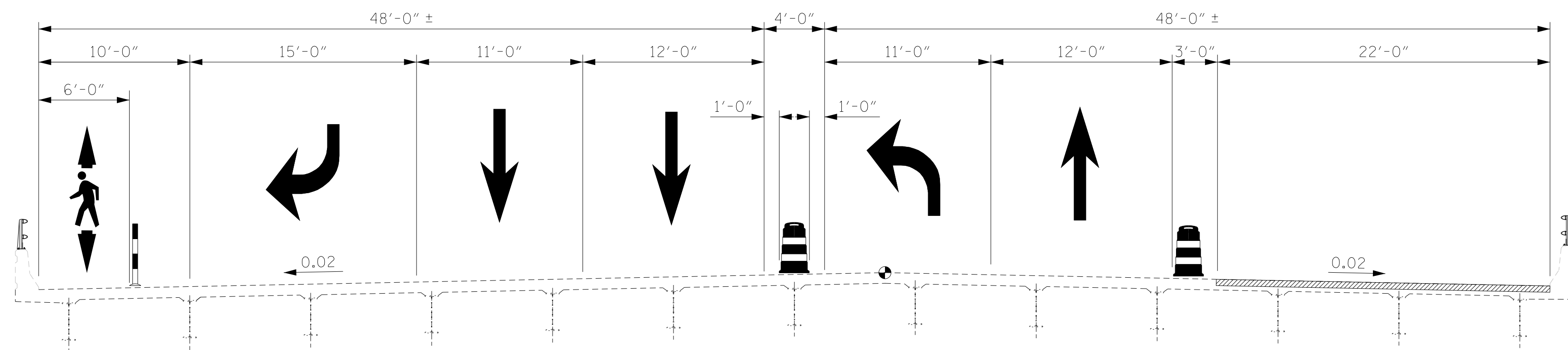
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MANAGEMENT PLAN

GENERAL NOTES

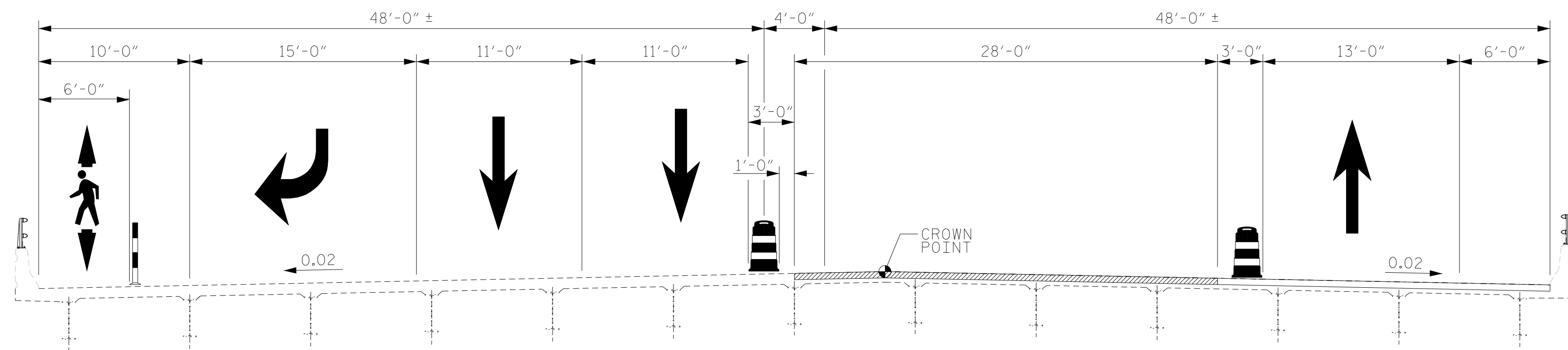
PHASE I  
P1



PHASE II  
NB2



PHASE III  
NB3



- DENOTES REMOVAL OF CONCRETE ISLAND
- DENOTES AREA FOR POLYESTER POLYMER CONCRETE OVERLAY
- DENOTES AREA THAT HAS RECEIVED POLYESTER POLYMER CONCRETE OVERLAY

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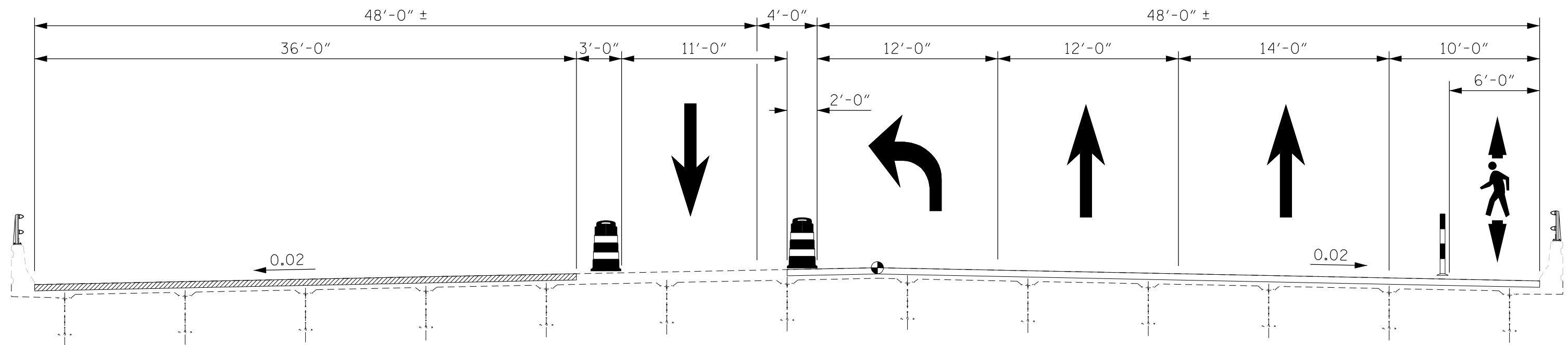
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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WORK ZONE TRAFFIC CONTROL

TRANSPORTATION  
MANAGEMENT PLAN

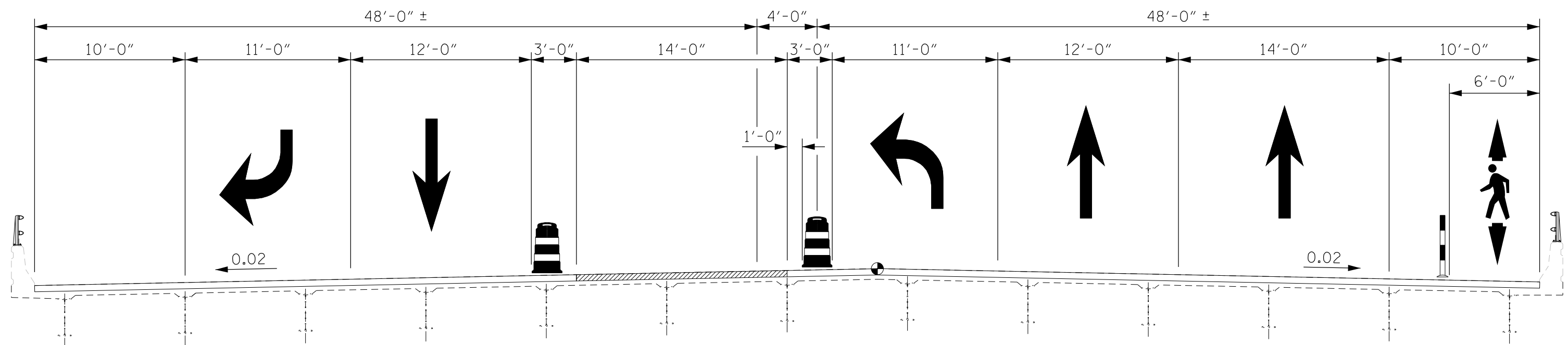
NORTHBOUND  
CUT SECTIONS



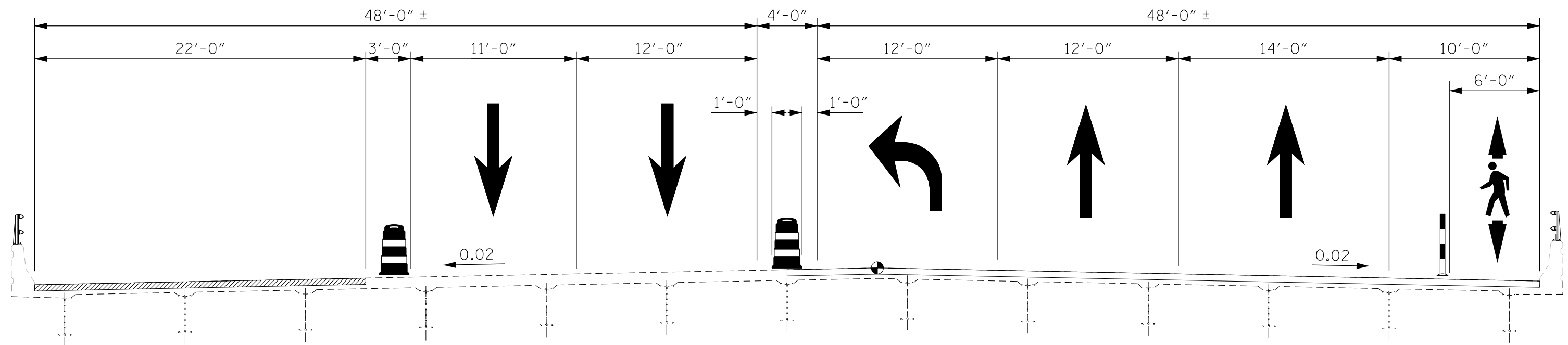
PHASE IV  
SB4



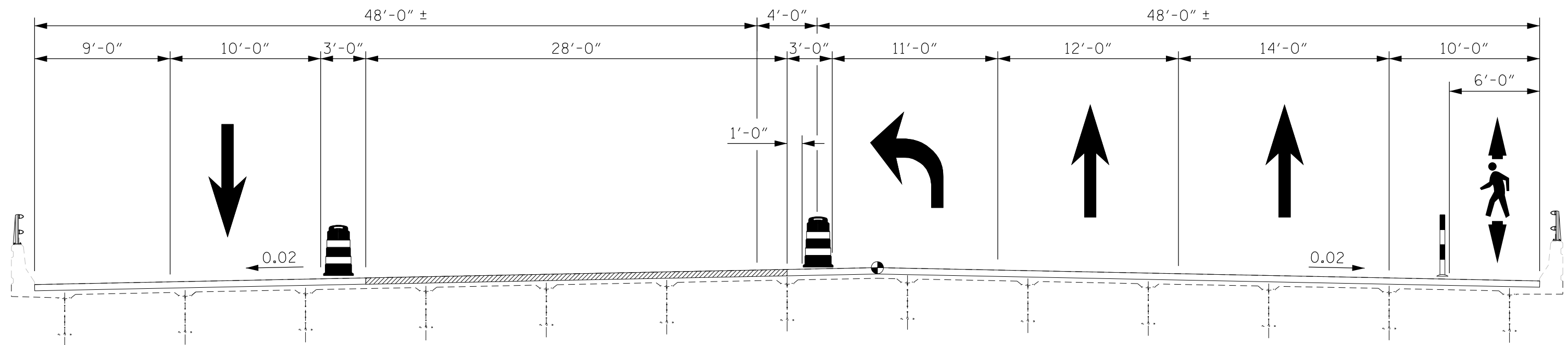
PHASE V  
SB5

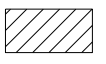



PHASE IV.A  
ALTERNATE  
SB4A

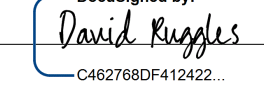
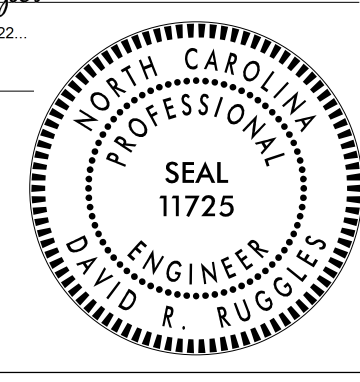


PHASE V.A  
ALTERNATE  
SB5A



 DENOTES AREA FOR POLYESTER POLYMER CONCRETE OVERLAY  
 DENOTES AREA THAT HAS RECEIVED POLYESTER POLYMER CONCRETE OVERLAY

  
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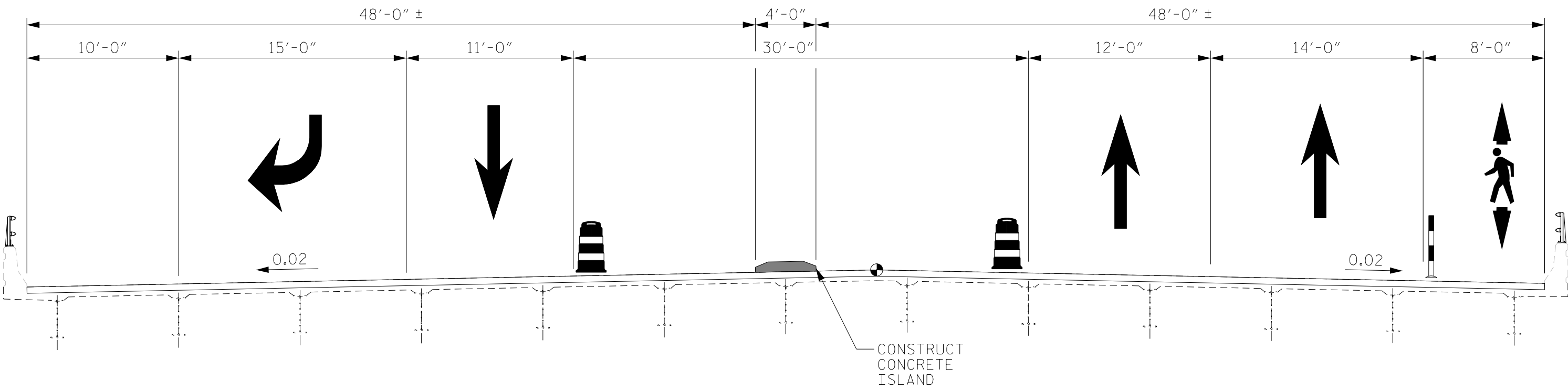
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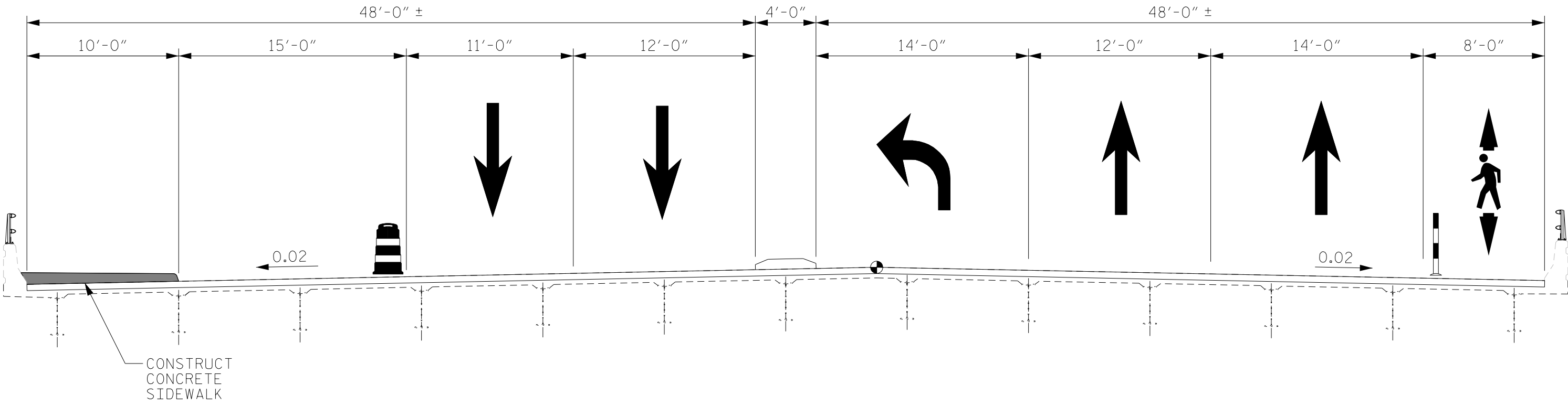
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SOUTHBOUND  
CUT SECTIONS

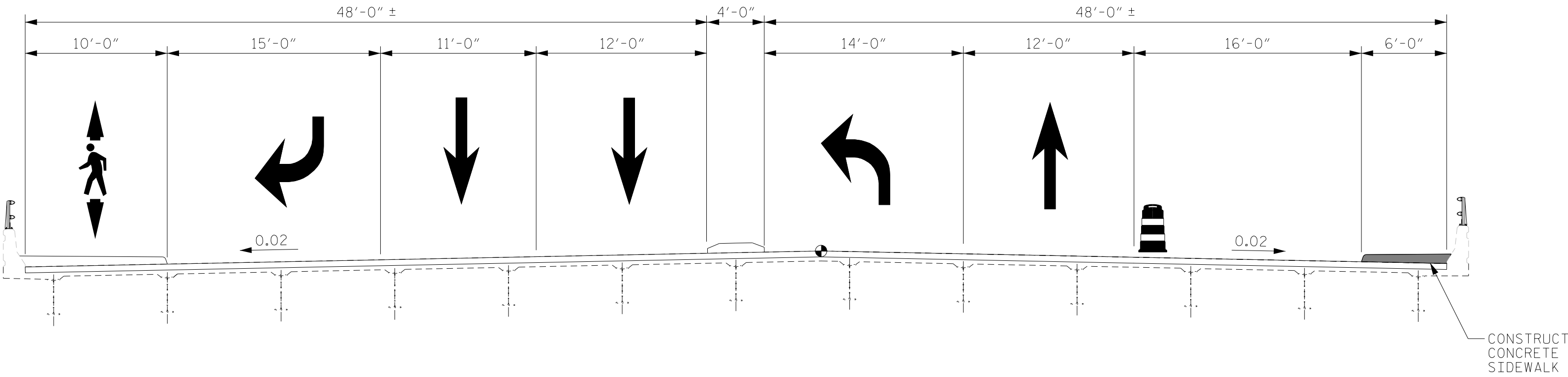
PHASE VI  
P6



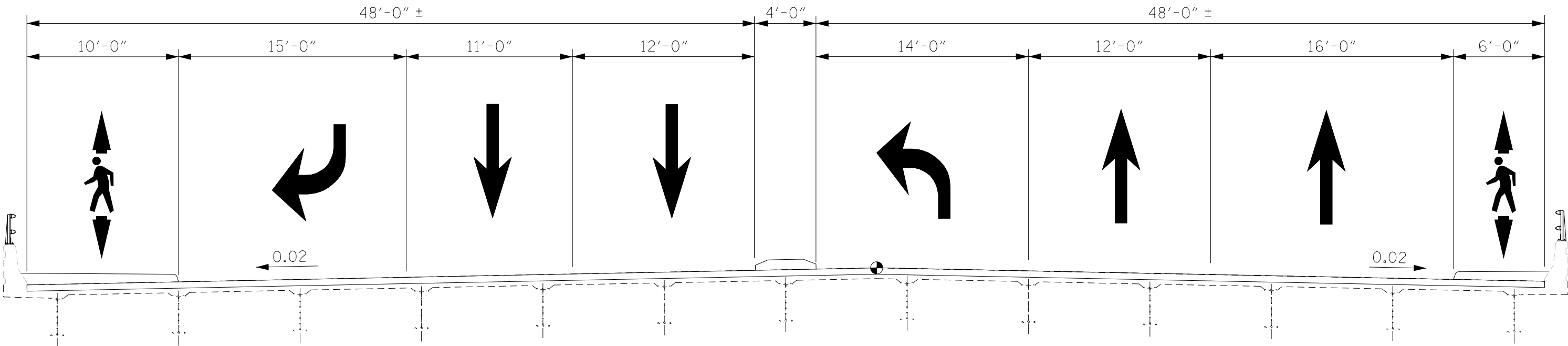
PHASE VII  
P7



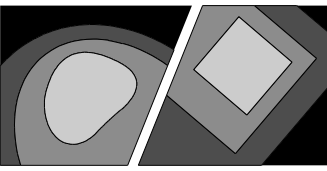
PHASE VIII  
P8



FINAL  
TRAFFIC  
PATTERN



■ DENOTES CONSTRUCTION OF CONCRETE ISLAND AND SIDEWALK  
□ DENOTES AREA THAT HAS RECEIVED POLYESTER POLYMER CONCRETE OVERLAY



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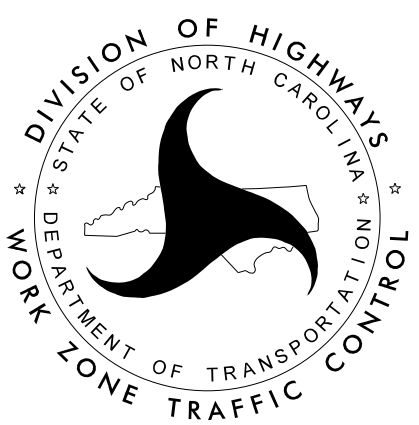
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PROFESSIONAL  
ENGINEER  
DAVID R. RUGGLES



TRANSPORTATION  
MANAGEMENT PLAN

CUT SECTIONS



# PHASING

## NOTES

REPLACE MARKINGS AND RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR AS DIRECTED BY THE ENGINEER. TEMPORARY MARKINGS SHALL MATCH "FINAL TRAFFIC PATTERN" TYPICAL SECTION SHOWN ON TMP-2B.

MAINTAIN VEHICULAR ACCESS TO ALL BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR AS DIRECTED BY THE ENGINEER.

THE TERM RSD DENOTES "ROADWAY STANDARD DRAWING".

THE TERM SB DENOTES "SOUTHBOUND" AND NB DENOTES "NORTHBOUND".

THE TERM PPC DENOTES "POLYESTER POLYMER CONCRETE".

PHASING BELOW STARTS ON RIGHT SIDE OF BRIDGE (LOOKING UPSTATION). CONTRACTOR MAY START ON LEFT SIDE OF BRIDGE PROVIDED REVISED WORK PLAN IS SUBMITTED TO AND APPROVED BY ENGINEER.

CONTRACTOR TO PERFORM SURFACE PREPARATION, SHOTBLASTING AND PPC OVERLAY FOR ONE SPAN PER EVENING FOR EACH PHASE. CONTRACTOR MAY PERFORM SURFACE PREPARATION, SHOTBLASTING AND PPC OVERLAY FOR UP TO FOUR SPANS PER EVENING PROVIDED WORK CAN BE COMPLETED AND CONCRETE CURED WITHIN TIME RESTRICTIONS PROVIDED. CONTRACTOR MUST PLACE PPC OVERLAY FOR A COMPLETE SPAN DURING EVENING OPERATIONS; PARTIAL SPAN PLACEMENT OF PPC OVERLAY IS NOT ALLOWED.

PHASES XI AND XII SHALL PROCEED AFTER CONSTRUCTION IN OTHER PHASES UNLESS OTHERWISE NOTED ON THE PLANS. ALTERNATIVELY, PHASES XI AND XII MAY BE PERFORMED BEFORE PHASE I.

## PHASE I

- STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ROCK QUARRY RD (SR 2542) AND I-440 RAMPS AND LOOPS ACCORDING TO RSD 1101.01.
- STEP 2: PLACE ADVANCE SIGNING AND CLOSE CENTER SB LANE AND CENTER NB LANE OF ROCK QUARRY ROAD AS SHOWN IN PHASE I DETAIL. DEMOLISH EXISTING CONCRETE ISLAND ON BRIDGE AS SHOWN ON TYPICAL P1 AND REMOVE MATERIAL OFF SITE. SWEEP UP ANY LOOSE DEBRIS AND PLACE DRUMS AT PREVIOUS ISLAND LOCATION.

## PHASE II

- STEP 1: PLACE TEMPORARY SIGNING, BARRICADES, AND TUBULAR MARKERS AND DETOUR PEDESTRIAN TRAFFIC TO WEST SIDE OF ROCK QUARRY ROAD AS SHOWN ON PHASE II DETAIL.
- STEP 2: PLACE ADVANCE SIGNING AND CLOSE NB ROCK QUARRY RIGHT LANE AND RIGHT SHOULDER TO TRAFFIC AS SHOWN ON PHASE II DETAIL.
- STEP 3: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, RIGHT LANE AND SHOULDER, AS SHOWN ON TYPICAL NB2. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 3 FOR SPANS B, C, D, AND APPROACH SLAB 2.
- STEP 4: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 5: OPEN NB ROCK QUARRY RIGHT LANE TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE III

- STEP 1: PLACE ADVANCE SIGNING AND CLOSE NB ROCK QUARRY MIDDLE LANE AND LEFT TURN LANE TO TRAFFIC AS SHOWN ON PHASE III DETAIL.
- STEP 2: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, MIDDLE LANE AND LEFT TURN LANE, AS SHOWN ON TYPICAL NB3. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 2 FOR SPANS B, C, D, AND APPROACH SLAB 2.
- STEP 3: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 4: OPEN NB ROCK QUARRY MIDDLE LANE AND LEFT TURN LANE TO TRAFFIC. REMOVE PEDESTRIAN DETOUR, BARRICADES, AND TUBULAR MARKERS.

## PHASE IV

- STEP 1: PLACE TEMPORARY SIGNING, BARRICADES AND TUBULAR MARKERS AND DETOUR PEDESTRIAN TRAFFIC TO EAST SIDE OF ROCK QUARRY ROAD AS SHOWN ON PHASE IV DETAIL.
- STEP 2: PLACE ADVANCE SIGNING AND CLOSE SB ROCK QUARRY MIDDLE LANE, RIGHT TURN LANE AND RIGHT SHOULDER (LEFT TWO LANES AND LEFT SHOULDER LOOKING UP STATION) TO TRAFFIC AS SHOWN ON PHASE IV DETAIL.
- STEP 3: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, MIDDLE LANE, RIGHT TURN LANE AND SHOULDER, AS SHOWN ON TYPICAL SB4. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 3 FOR SPANS B, C, D, AND APPROACH SLAB 2.
- STEP 4: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 5: OPEN SB ROCK QUARRY MIDDLE LANE, RIGHT TURN LANE, AND SHOULDER TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE V

- STEP 1: PLACE ADVANCE SIGNING AND CLOSE SB ROCK QUARRY INSIDE LANE TO TRAFFIC AS SHOWN ON PHASE V DETAIL.
- STEP 2: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, INSIDE LANE, AS SHOWN ON TYPICAL SB5. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 2 FOR SPANS B, C, D AND APPROACH SLAB 2.
- STEP 3: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 4: OPEN SB ROCK QUARRY INSIDE LANE TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE IV (ALTERNATE)

- STEP 1: PLACE BARRICADES AND TUBULAR MARKERS AND DETOUR PEDESTRIAN TRAFFIC TO EAST SIDE OF ROCK QUARRY ROAD AS SHOWN ON PHASE IV.A DETAIL.
- STEP 2: PLACE ADVANCE SIGNING AND CLOSE SB ROCK QUARRY RIGHT TURN LANE AND RIGHT SHOULDER (LEFT LANE AND LEFT SHOULDER LOOKING UP STATION) TO TRAFFIC AS SHOWN ON PHASE IV.A DETAIL.
- STEP 3: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, RIGHT TURN LANE AND SHOULDER, AS SHOWN ON TYPICAL SB4A. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 3 FOR SPANS B, C, D AND APPROACH SLAB 2.
- STEP 4: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 5: OPEN SB ROCK QUARRY RIGHT TURN LANE AND SHOULDER TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE V (ALTERNATE)

- STEP 1: PLACE ADVANCE SIGNING AND CLOSE SB ROCK QUARRY MIDDLE LANE AND INSIDE LANE TO TRAFFIC AS SHOWN ON PHASE V.A DETAIL.
- STEP 2: PERFORM SHOTBLASTING AND PLACE PPC OVERLAY ON APPROACH SLAB 1 & SPAN A, MIDDLE LANE AND INSIDE LANE, AS SHOWN ON TYPICAL SB5A. PERFORM JOINT DEMOLITION AND TEMPORARY/PERMANENT JOINT REPLACEMENT AS REQUIRED. REPEAT STEP 2 FOR SPANS B, C, D AND APPROACH SLAB 2.
- STEP 3: PLACE TEMPORARY PAVEMENT MARKINGS AS REQUIRED, MATCHING "FINAL TRAFFIC PATTERN" TYPICAL SECTION.
- STEP 4: OPEN SB ROCK QUARRY MIDDLE LANE AND INSIDE LANE TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE VI

- STEP 1: PLACE ADVANCE SIGNING AND CLOSE NB AND SB ROCK QUARRY CENTER LANES TO TRAFFIC AS SHOWN ON PHASE VI DETAIL.
- STEP 2: CONSTRUCT NEW CONCRETE ISLAND AS SHOWN ON TYPICAL P6.
- STEP 3: OPEN ROCK QUARRY CENTER LANES TO TRAFFIC. KEEP PEDESTRIAN DETOUR AND BARRICADES IN PLACE.

## PHASE VII

- STEP 1: PLACE ADVANCE SIGNING AND CLOSE SB ROCK QUARRY RIGHT TURN LANE TO TRAFFIC AS SHOWN ON PHASE VII DETAIL.
- STEP 2: CONSTRUCT NEW CONCRETE SIDEWALK AS SHOWN ON TYPICAL P7.
- STEP 3: OPEN SB ROCK QUARRY RIGHT TURN LANE TO TRAFFIC. REMOVE PEDESTRIAN DETOUR, BARRICADES, AND TUBULAR MARKERS.

## PHASE VIII

- STEP 1: PLACE BARRICADES AND TUBULAR MARKERS AND DETOUR PEDESTRIAN TRAFFIC TO WEST SIDE OF ROCK QUARRY ROAD, AS SHOWN ON PHASE VIII DETAIL.
- STEP 2: PLACE ADVANCE SIGNING AND CLOSE NB ROCK QUARRY RIGHT LANE TO TRAFFIC AS SHOWN ON PHASE VIII DETAIL.
- STEP 3: CONSTRUCT NEW CONCRETE SIDEWALK AS SHOWN ON TYPICAL P8.
- STEP 4: OPEN NB ROCK QUARRY RIGHT LANE TO TRAFFIC. REMOVE PEDESTRIAN DETOUR, BARRICADES, AND TUBULAR MARKERS.

## PHASE IX

- STEP 1: PLACE 150 FEET OF ASPHALT ON ROCK QUARRY ROAD ON NORTH SIDE OF BRIDGE AND 150 FEET OF ASPHALT ON SOUTH SIDE OF BRIDGE AS SHOWN ON PAVEMENT MARKING PLANS.
- STEP 2: PLACE FINAL PAVEMENT MARKINGS ON BRIDGE AND ON NEW ASPHALT SURFACES AS SHOWN ON PAVEMENT MARKING PLANS.
- STEP 3: COMPLETE ALL WORK AS REQUIRED BY PLAN DOCUMENTS AND REMOVE ALL TEMPORARY SIGNING.

## PHASE XI

- STEP 1: PERFORM BENT REPAIRS AT BENT 1 AND BENT 3 AS SHOWN ON STRUCTURE DRAWINGS. USE RSD 1101.04 TO CLOSE SHOULDERS OF I-40 AS REQUIRED.
- STEP 2: PLACE "BUMP" SIGN ON NORTHBOUND ROCK QUARRY APPROACH TO SPAN D AS NECESSARY AFTER SPAN D GIRDERS HAVE BEEN JACKED. LEAVE "BUMP" SIGN IN PLACE UNTIL GIRDERS HAVE BEEN UNJACKED.
- STEP 3: PLACE "BUMP" SIGN ON SOUTHBOUND ROCK QUARRY APPROACH TO SPAN A AS NECESSARY AFTER SPAN A GIRDERS HAVE BEEN JACKED. LEAVE "BUMP" SIGN IN PLACE UNTIL GIRDERS HAVE BEEN UNJACKED.

## PHASE XII

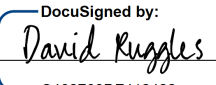
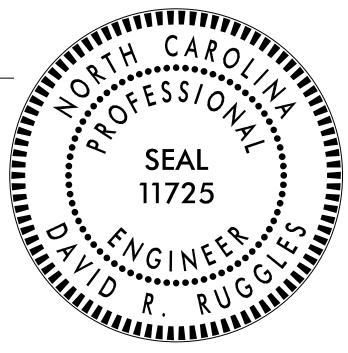
- STEP 1: USING RSD 1101.02, SHEET 4 OF 15, CLOSE MEDIAN LANE OF EASTBOUND I-40 AND MEDIAN LANE OF WESTBOUND I-40.
- STEP 2: PERFORM REPAIRS TO BENT 2 AS REQUIRED
- STEP 3: OPEN I-40 EASTBOUND AND WESTBOUND LANES TO TRAFFIC
- STEP 4: REPEAT STEPS 1 THRU 3 ON SUBSEQUENT NIGHTS AS REQUIRED.

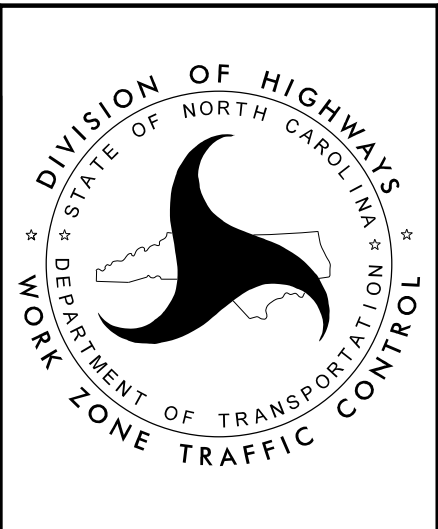
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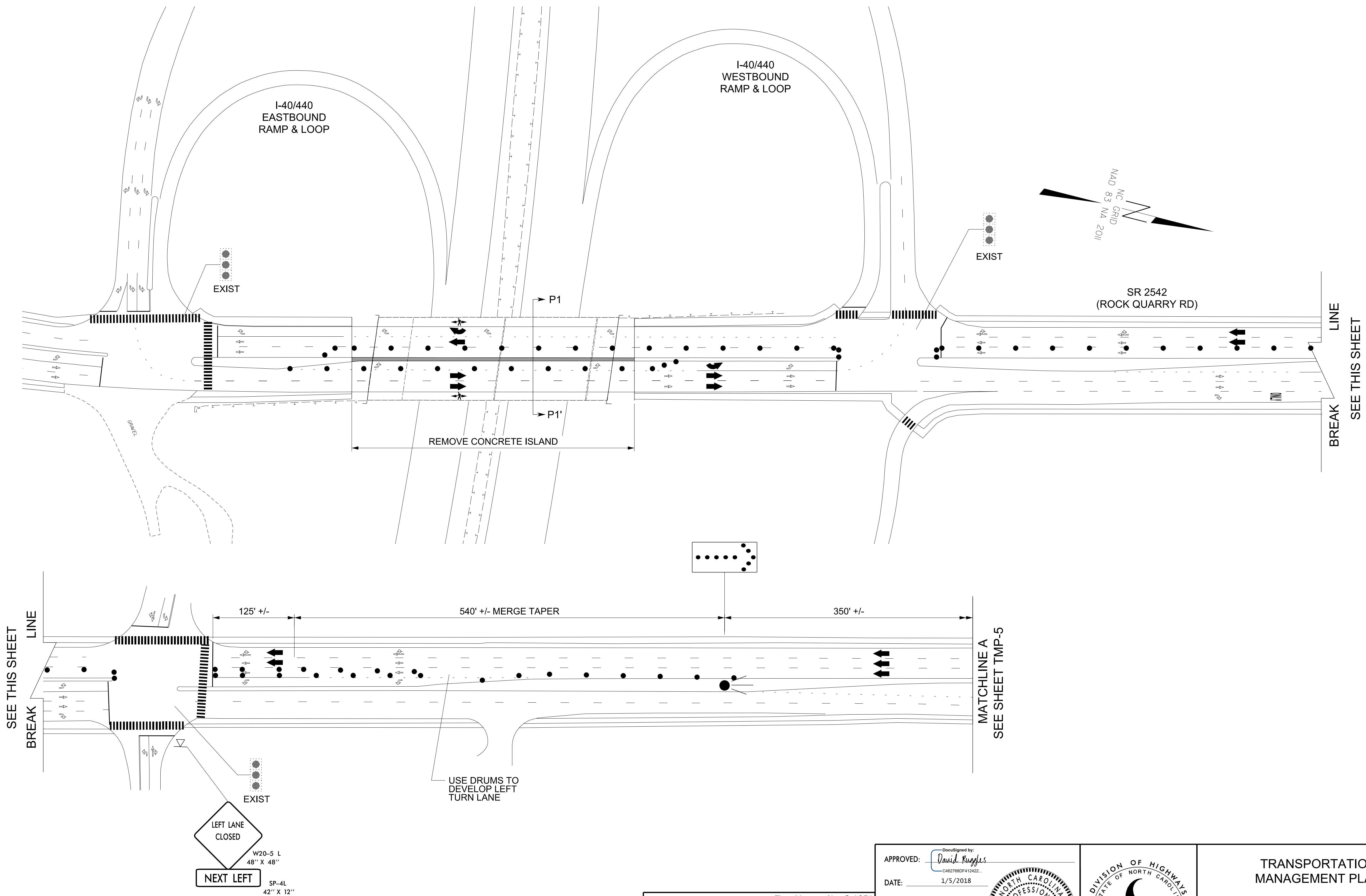
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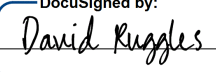


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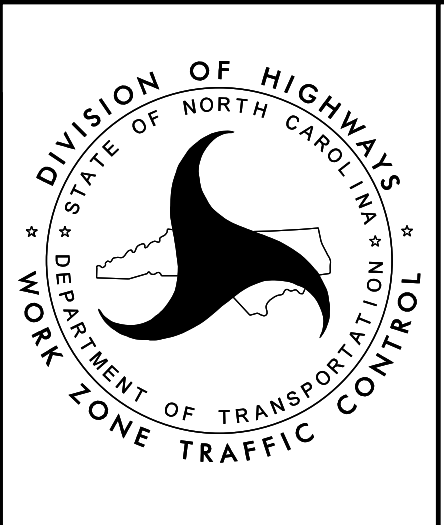
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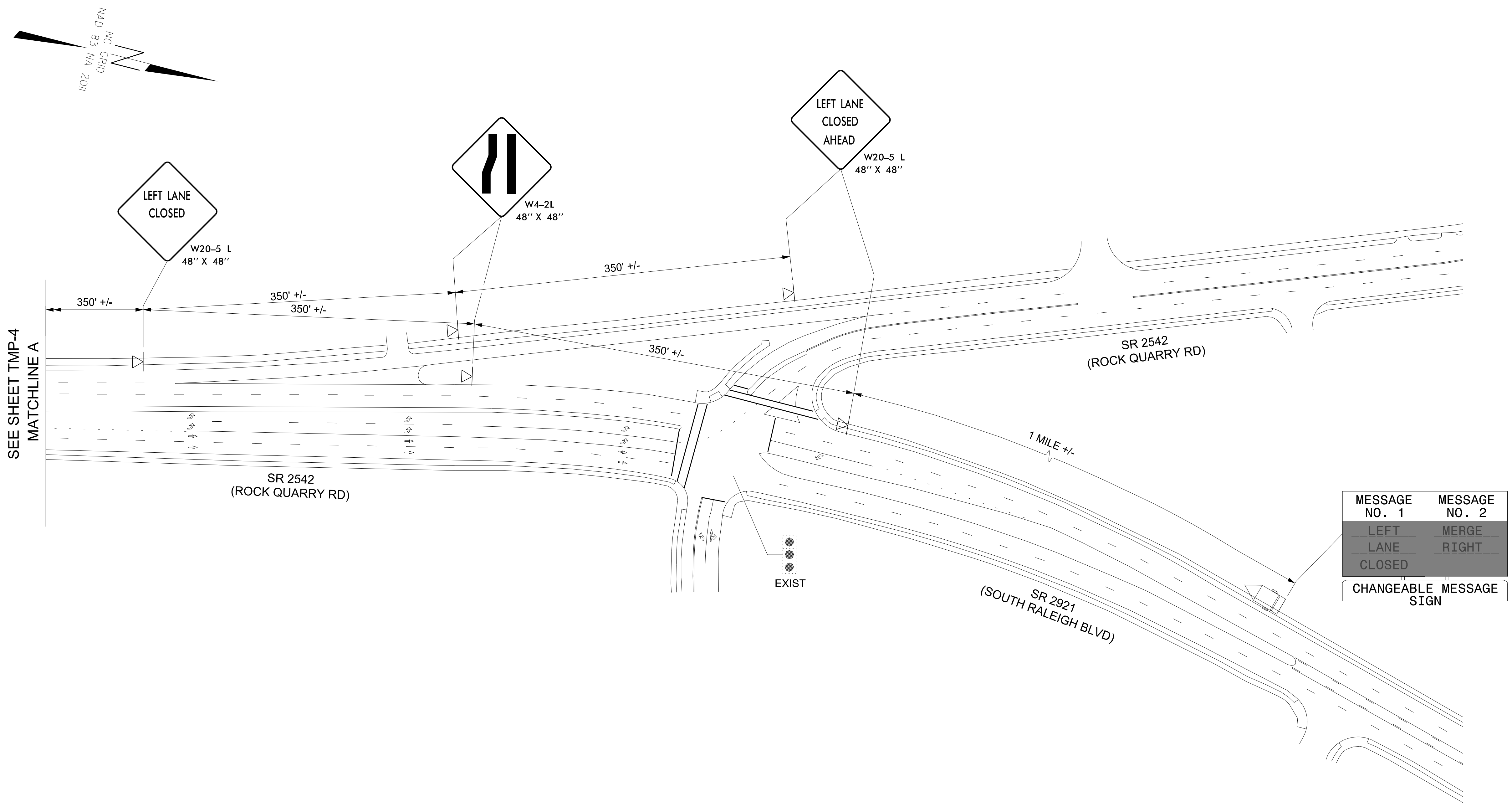


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**PHASE I DETAIL**

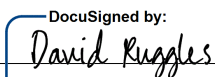
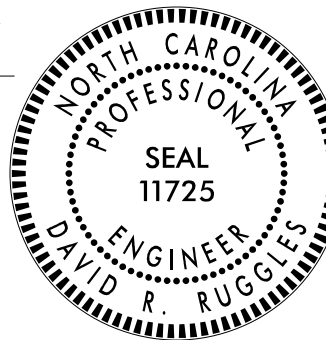


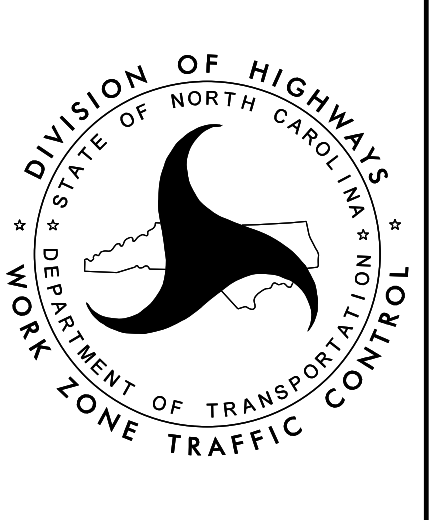
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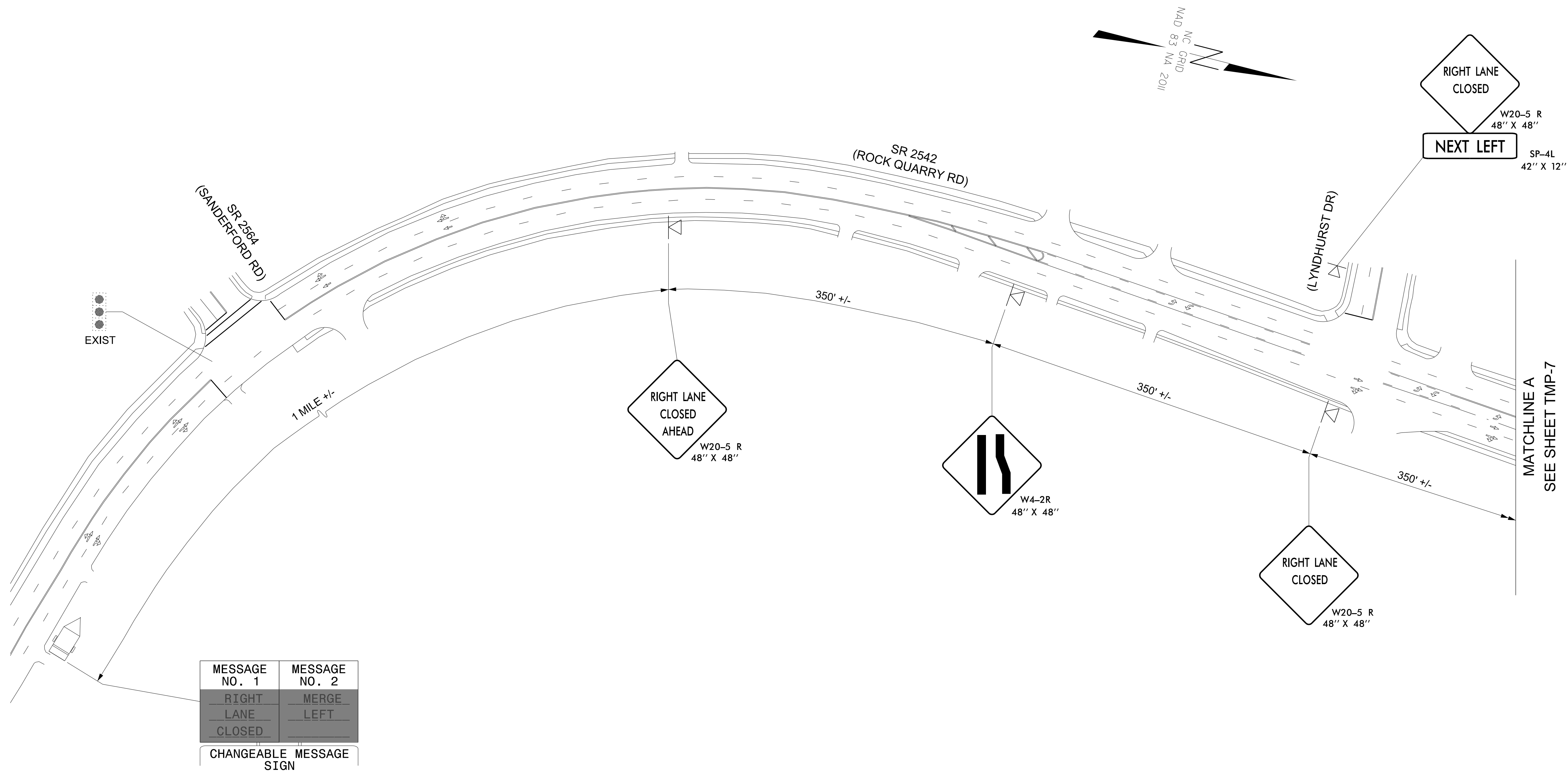
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PHASE I DETAIL

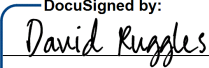
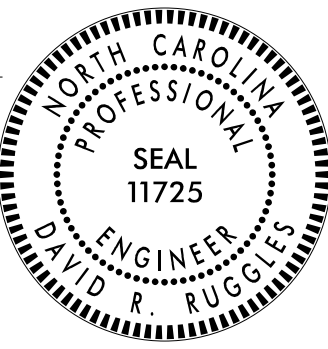


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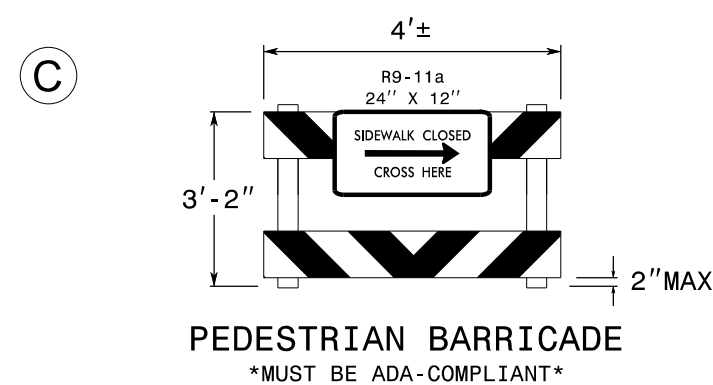
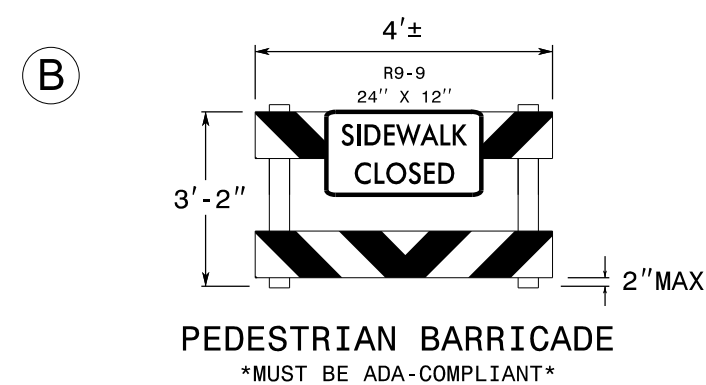
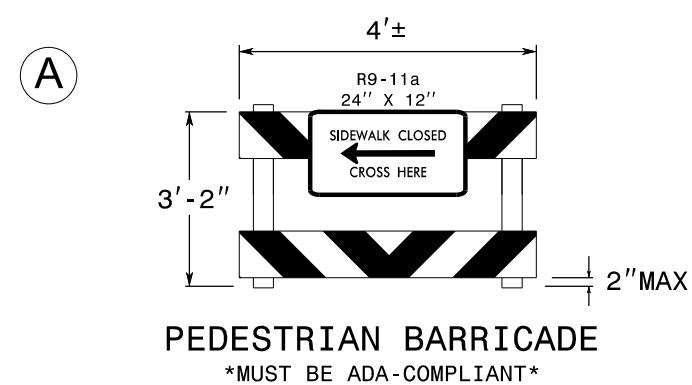
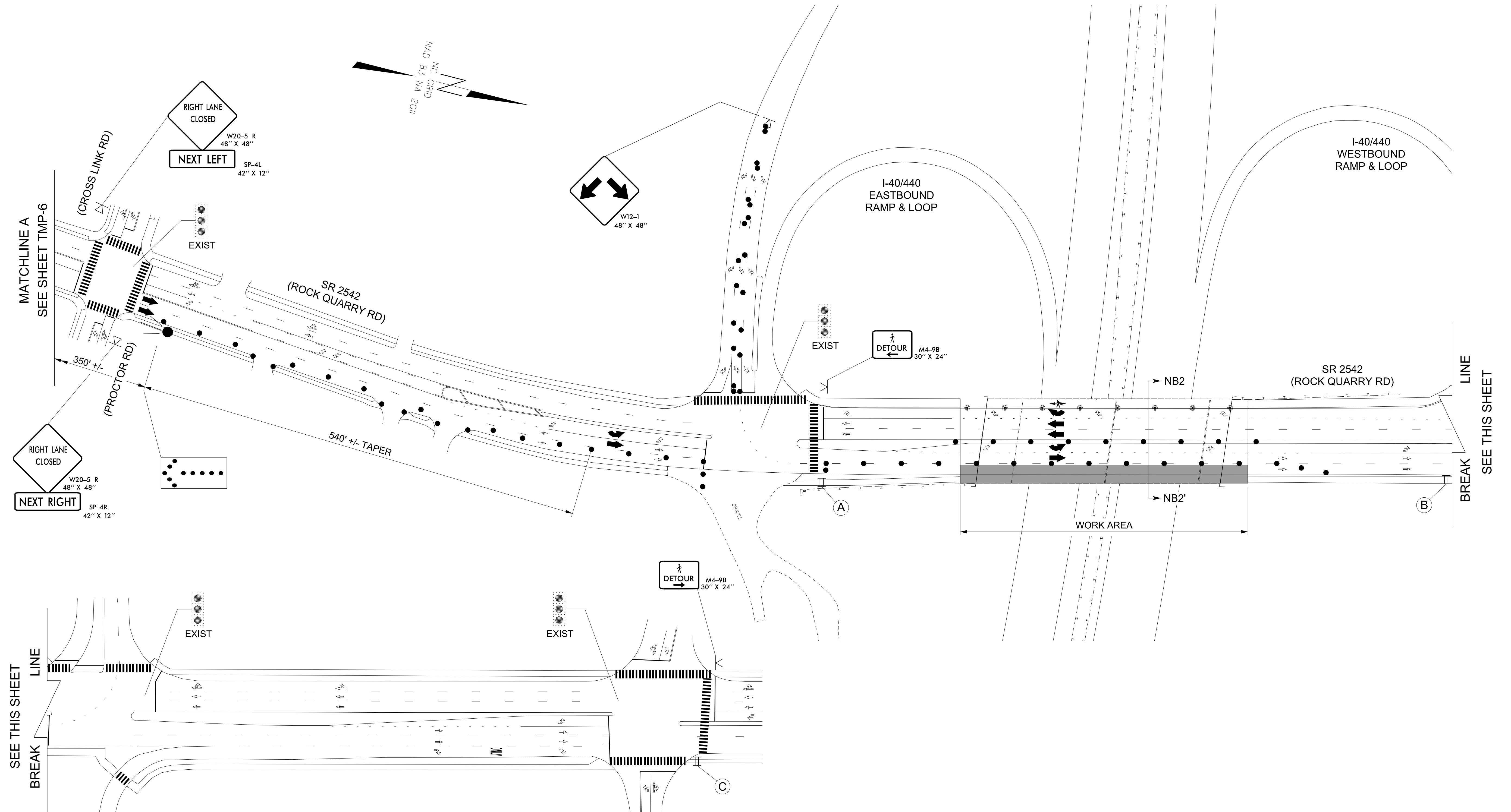


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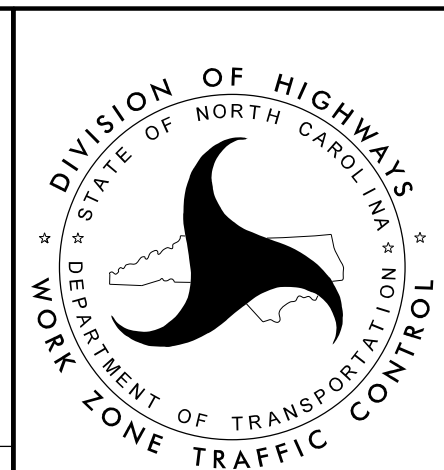
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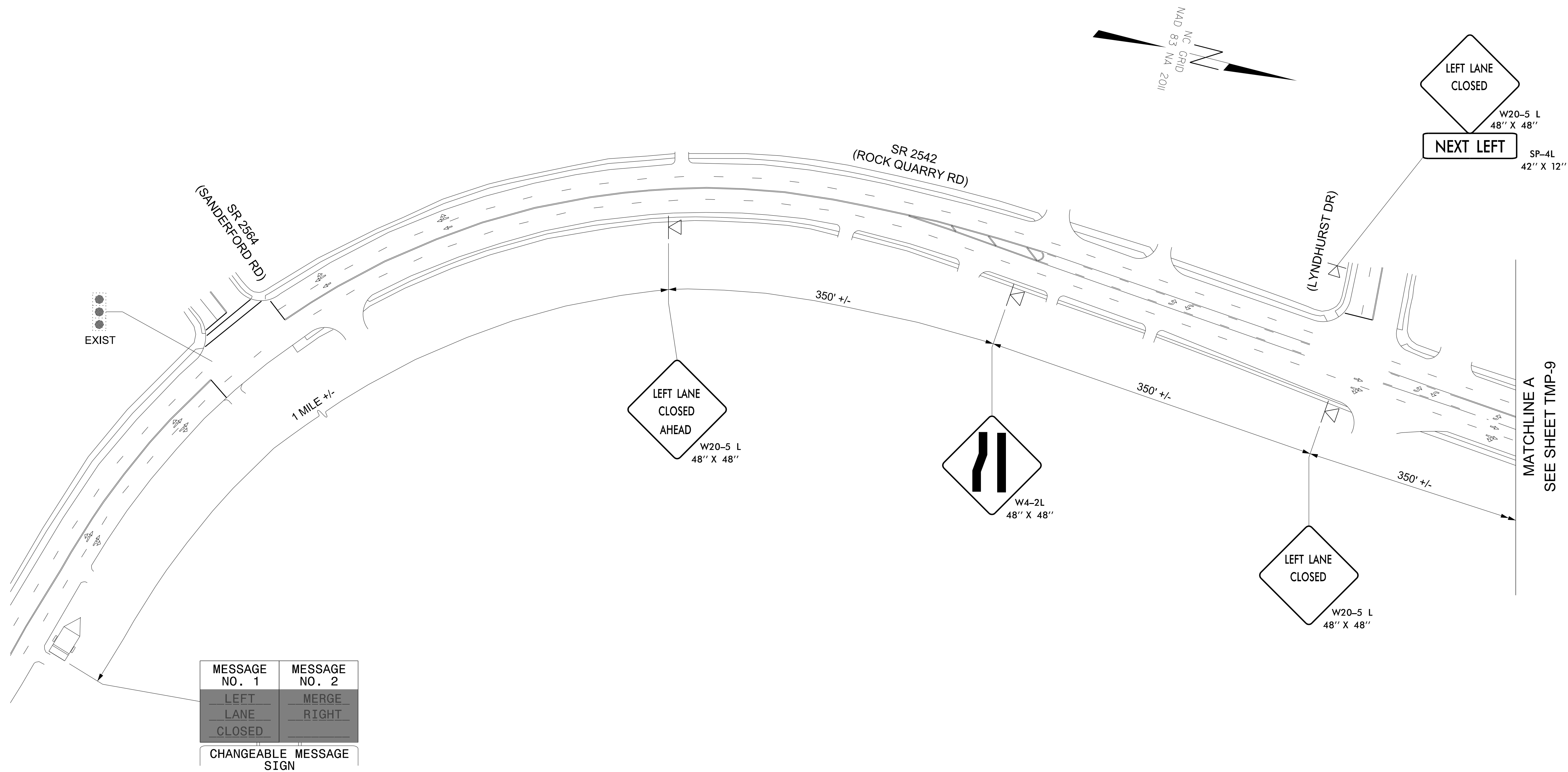
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PHASE II DETAIL

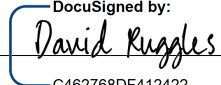
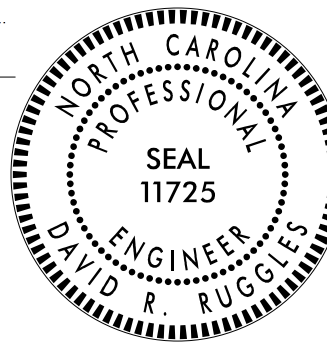


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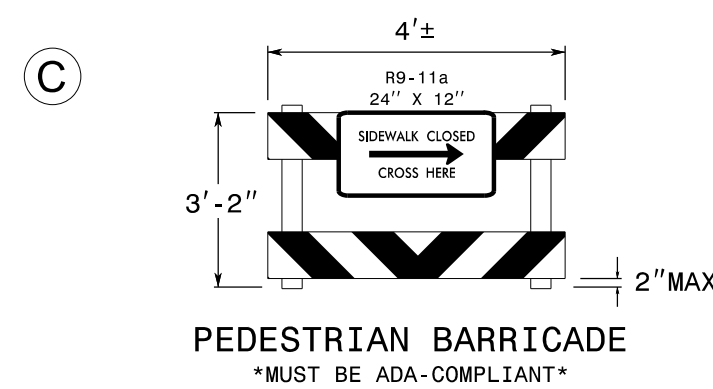
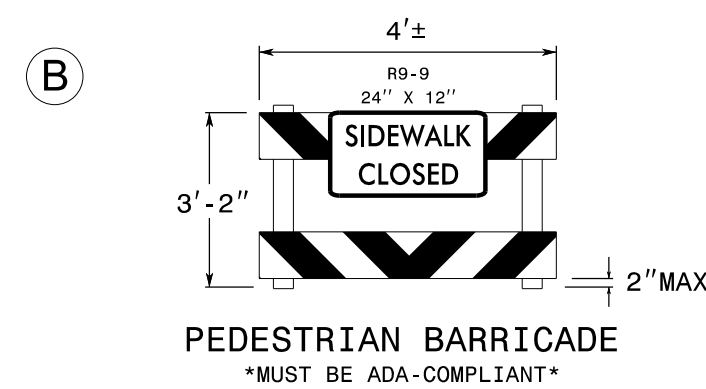
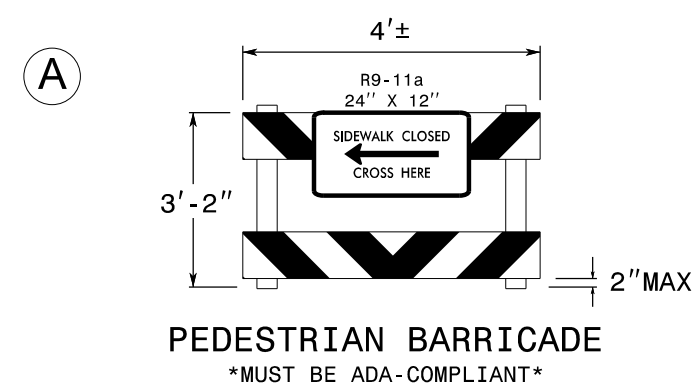
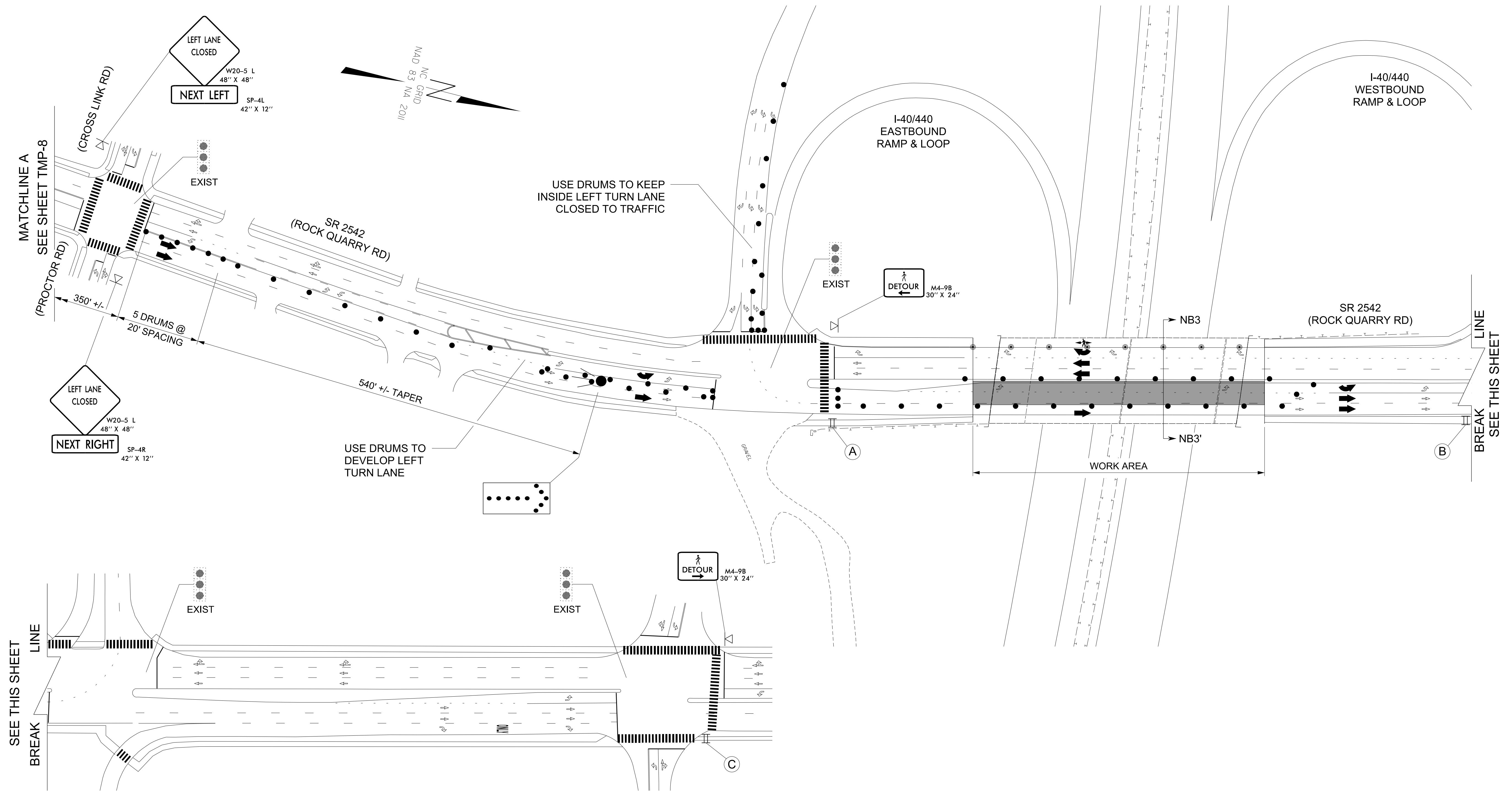


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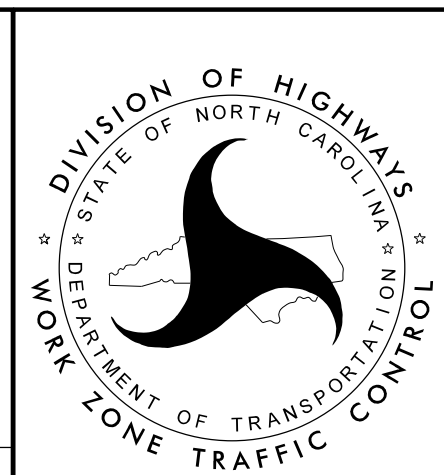
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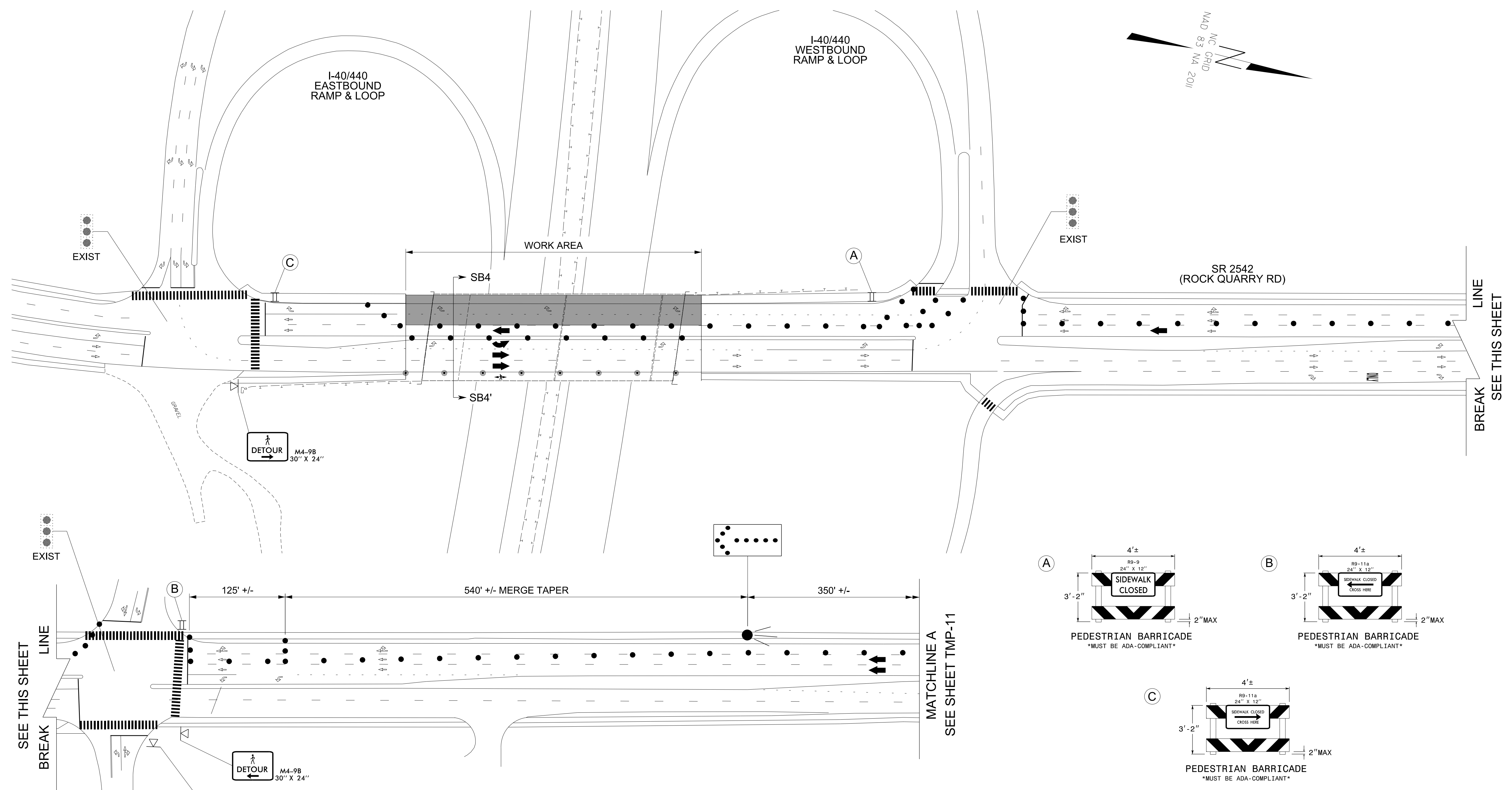
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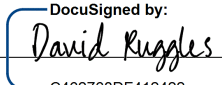


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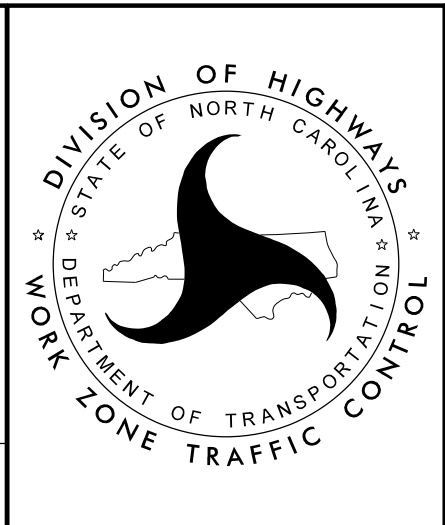
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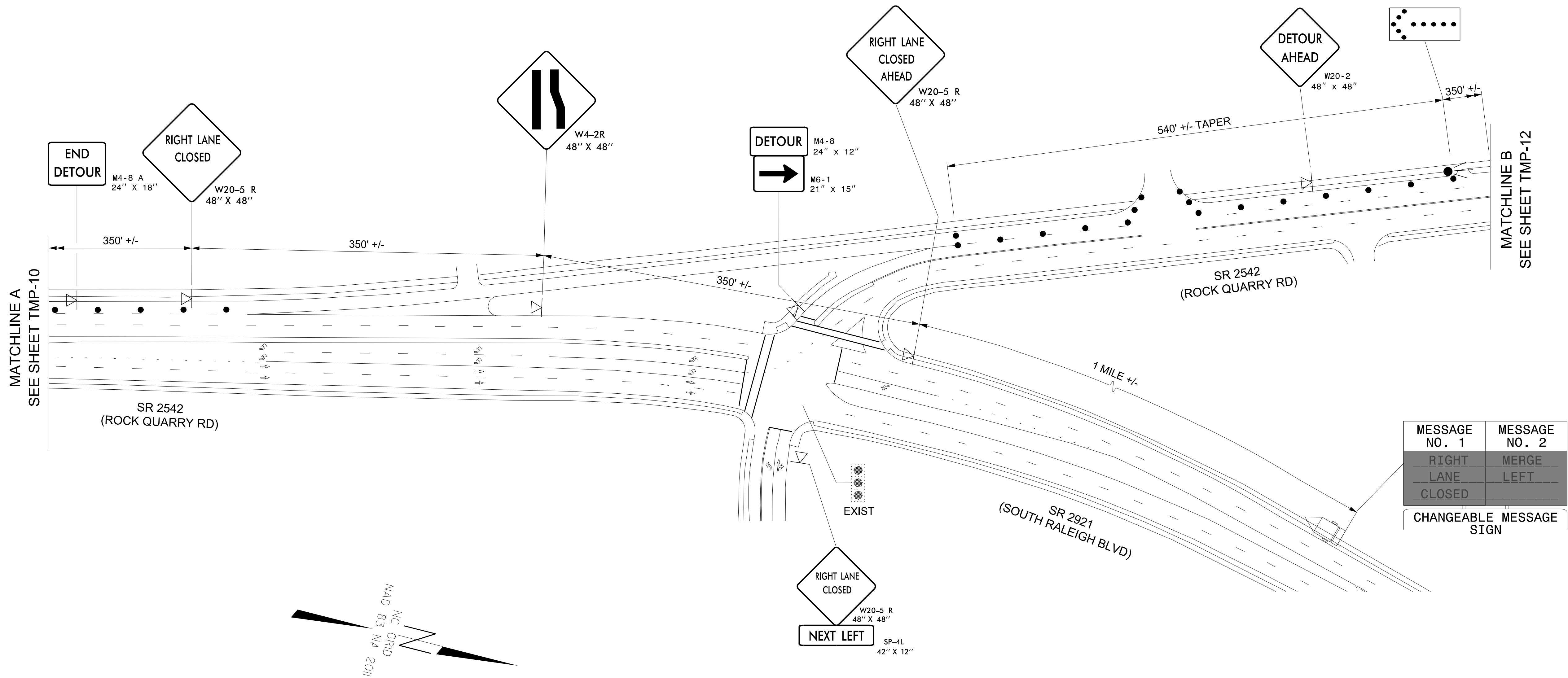
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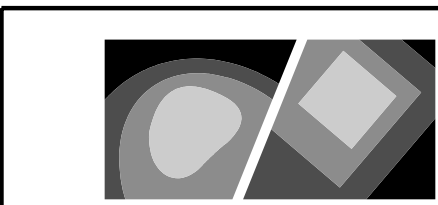
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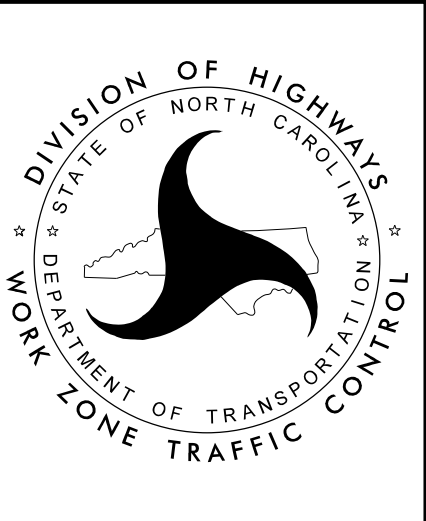
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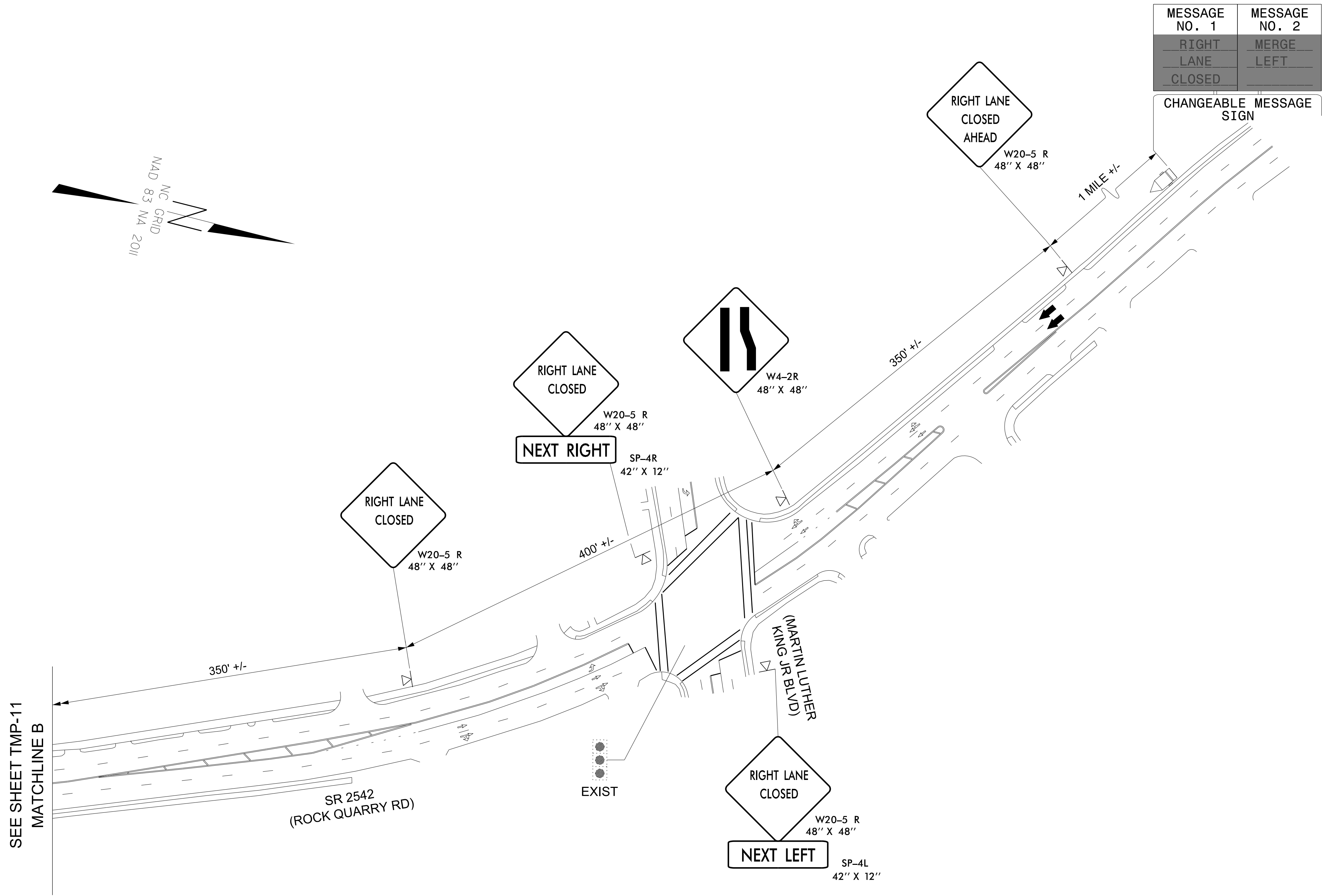
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PHASE IV DETAIL



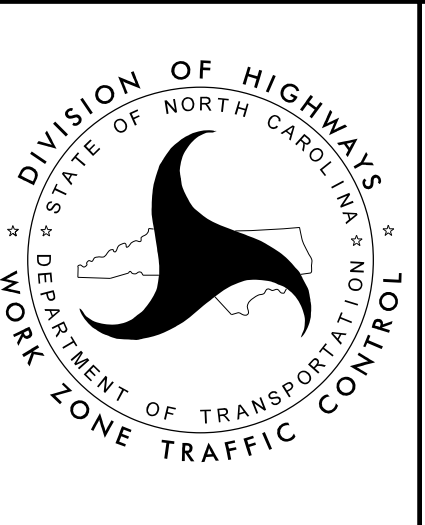
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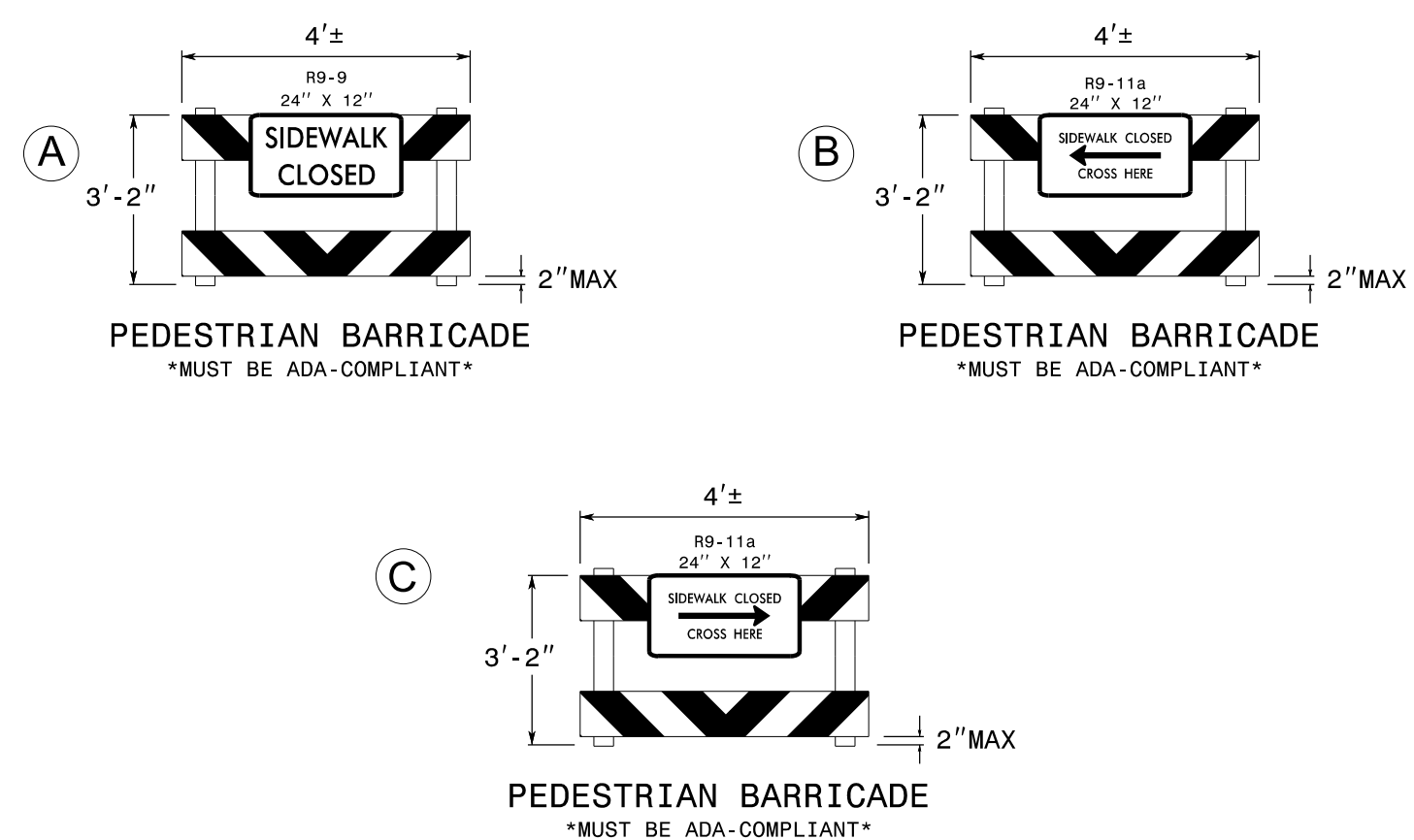
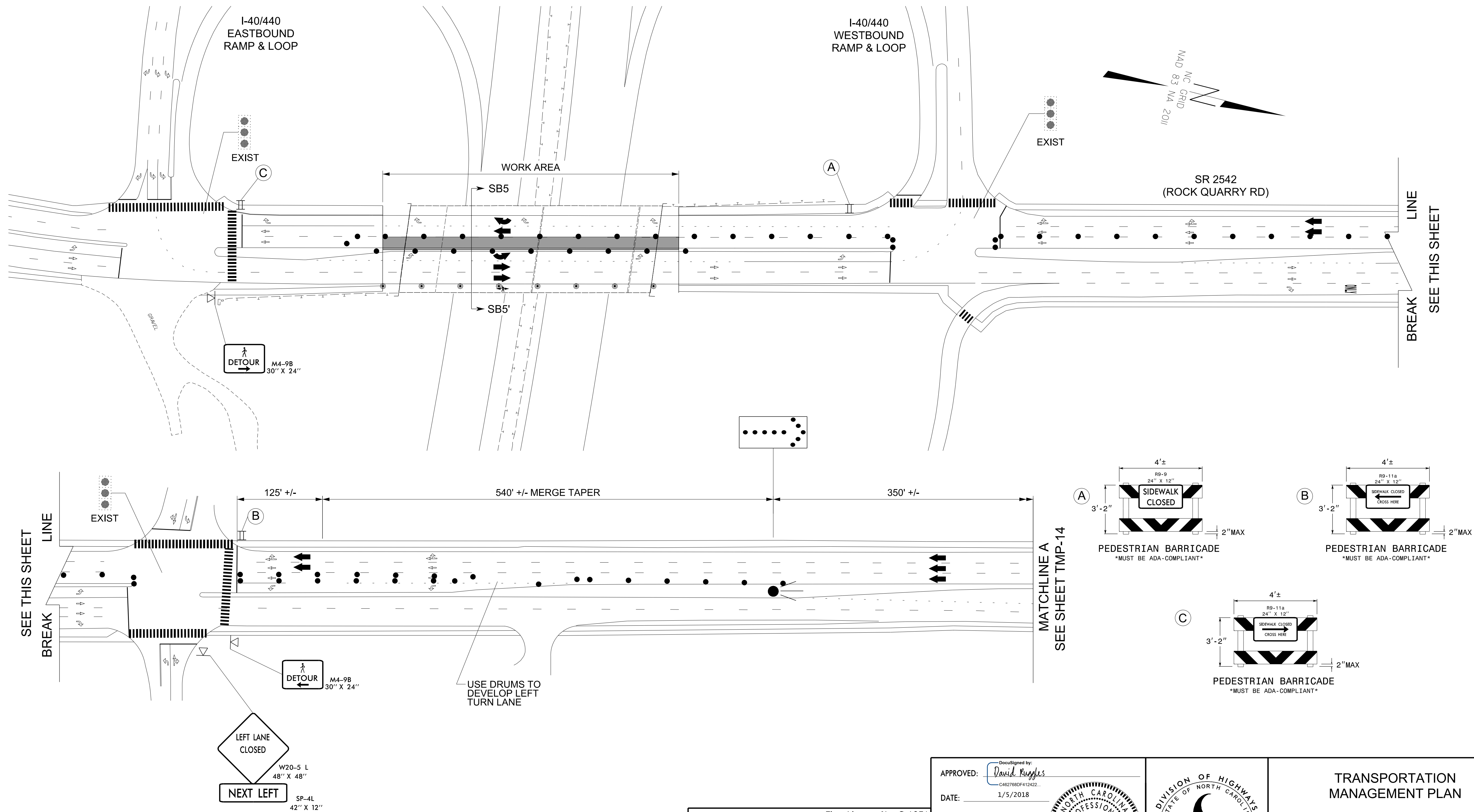
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TRANSPORTATION  
MANAGEMENT PLAN

PHASE IV DETAIL



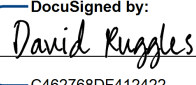


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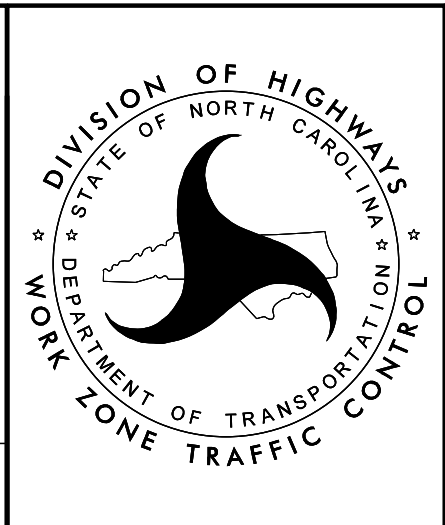
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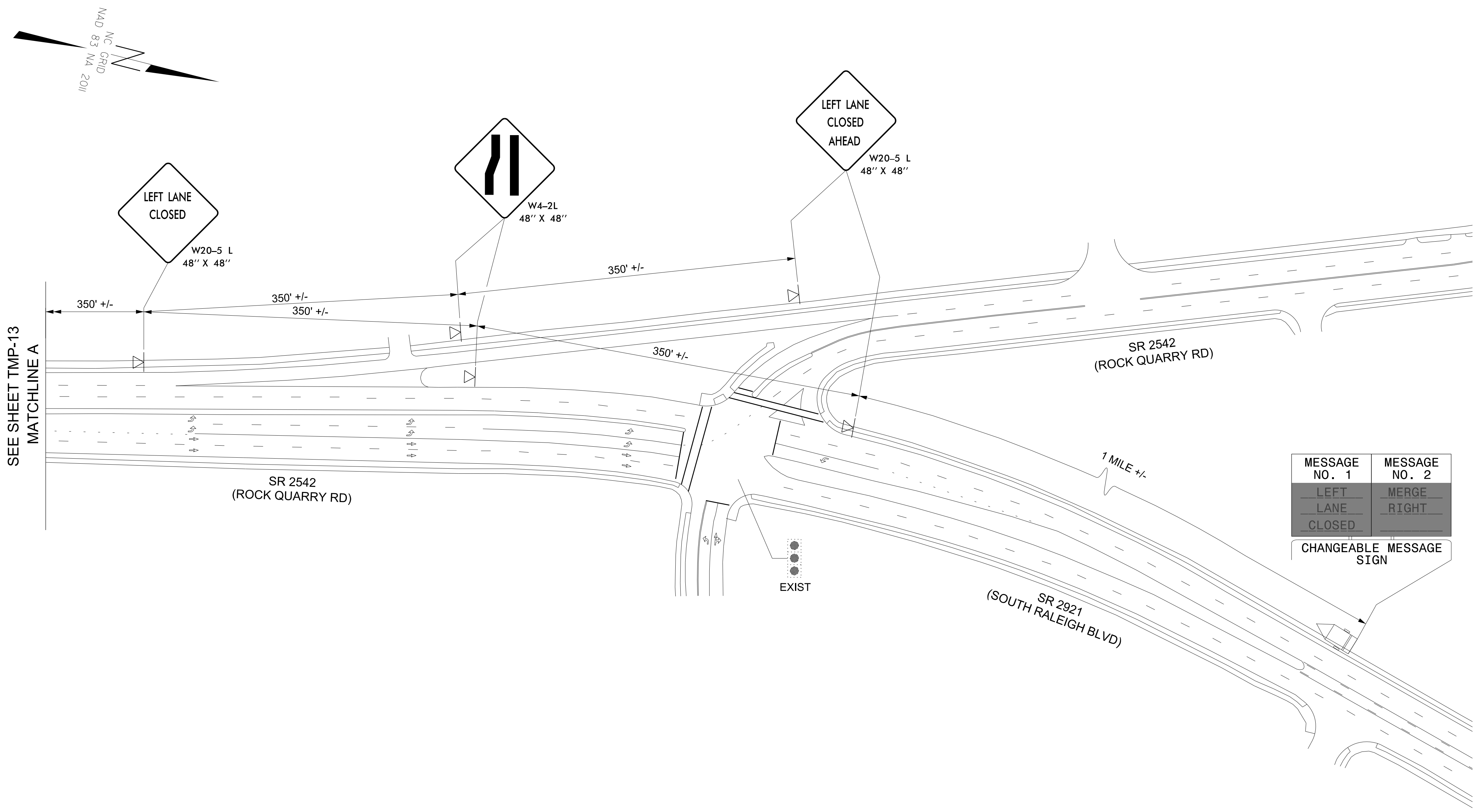


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**PHASE V DETAIL**



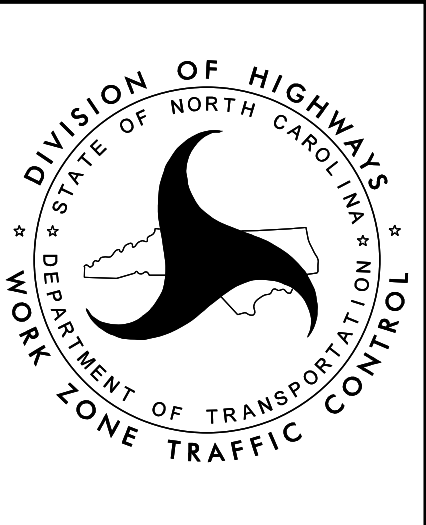
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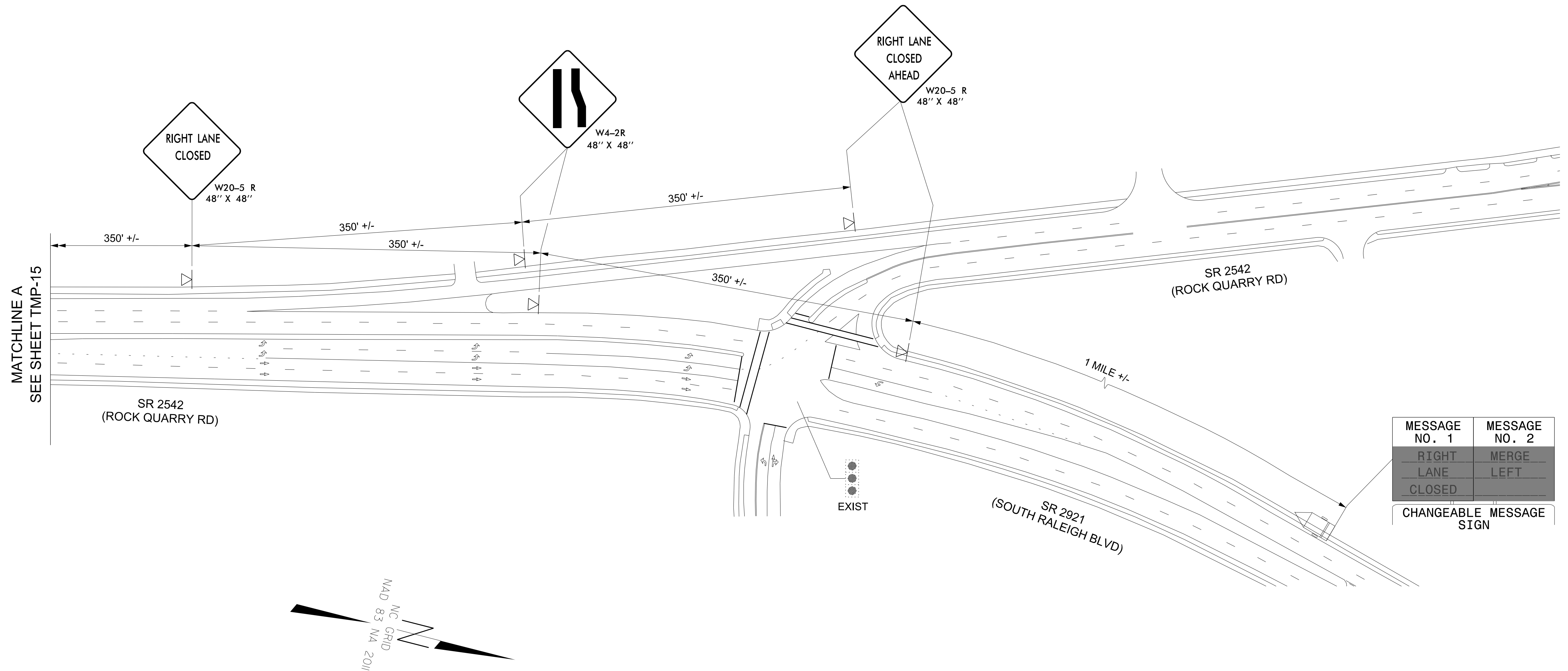


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MANAGEMENT PLAN

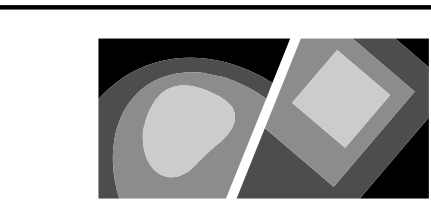
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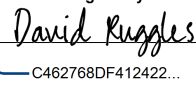
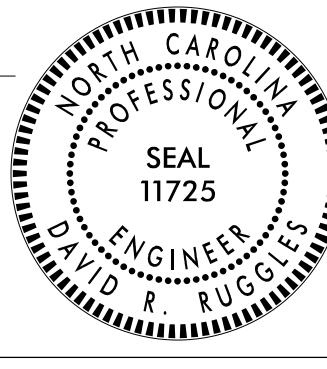


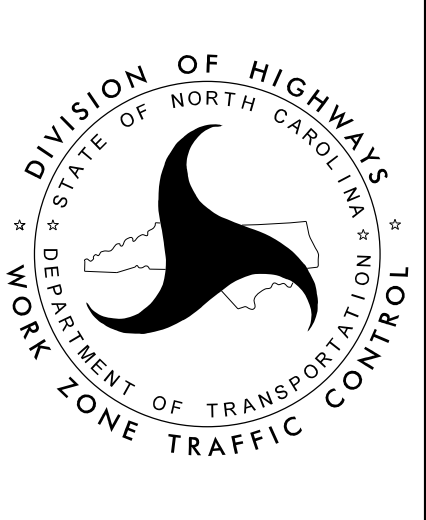
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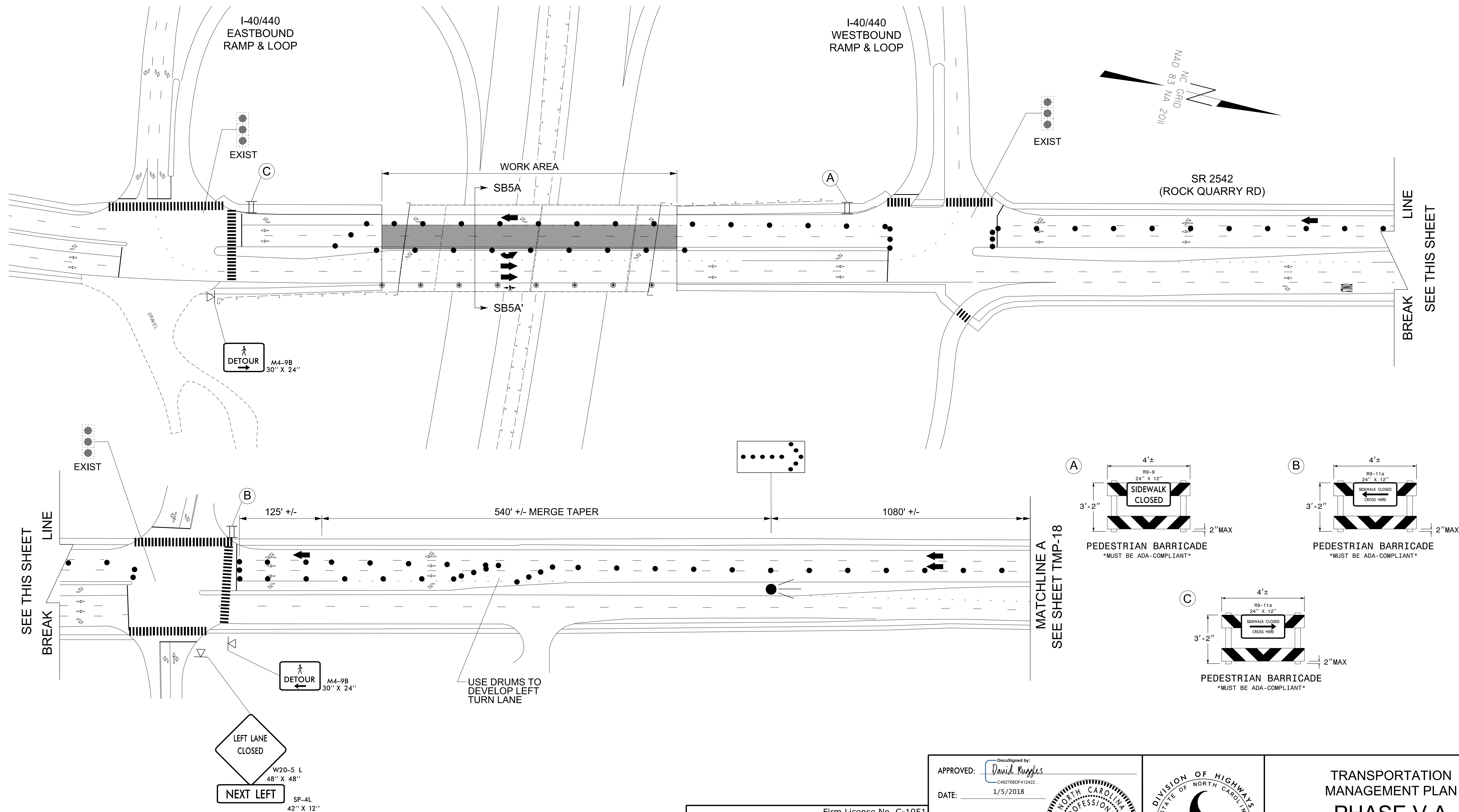
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**PHASE IV.A  
DETAIL  
ALTERNATE PHASING**





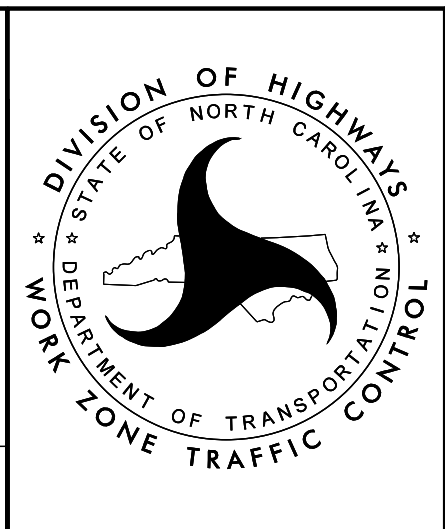
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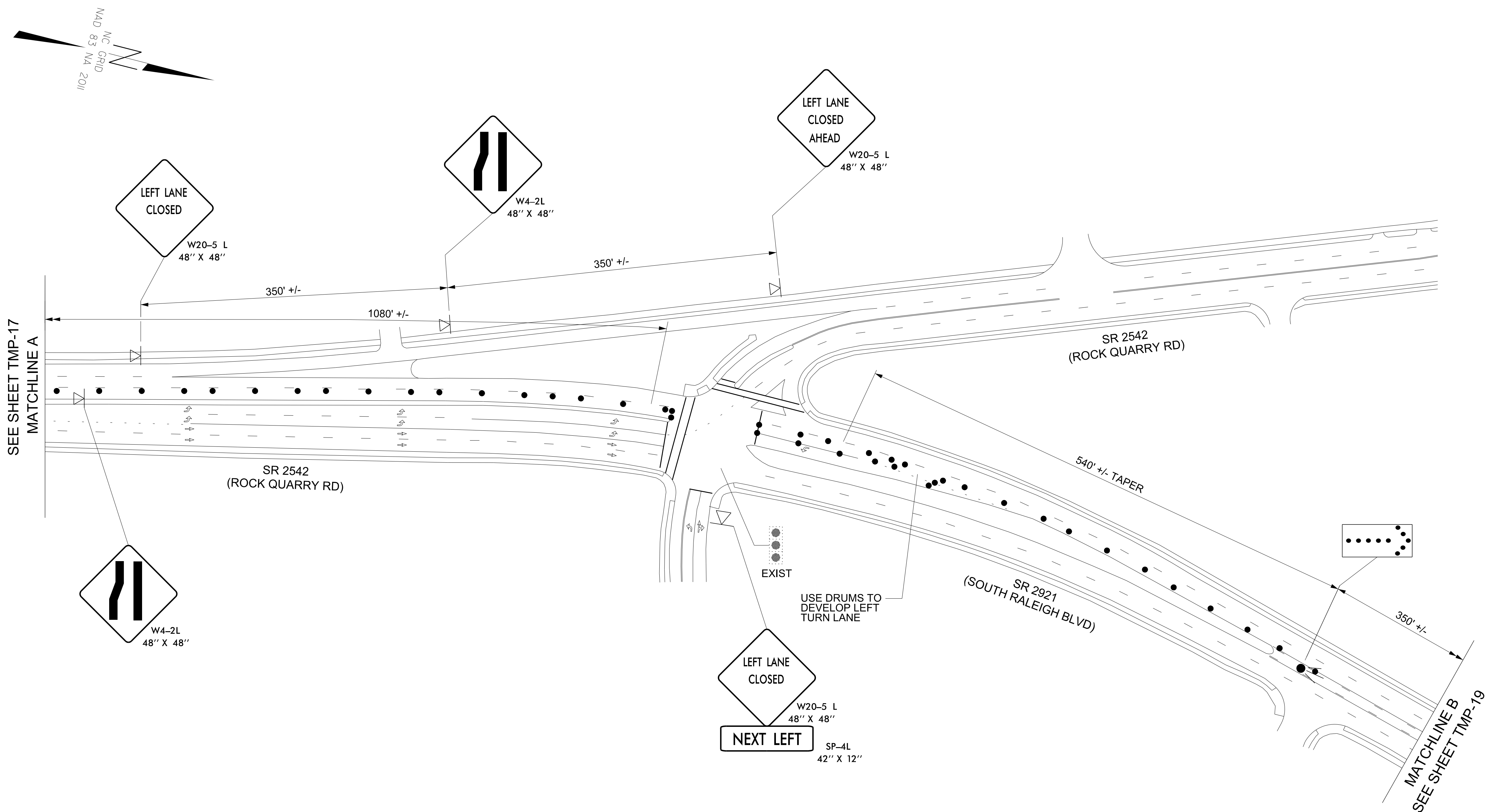
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**PHASE V.A  
DETAIL**  
ALTERNATE PHASING

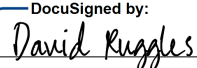


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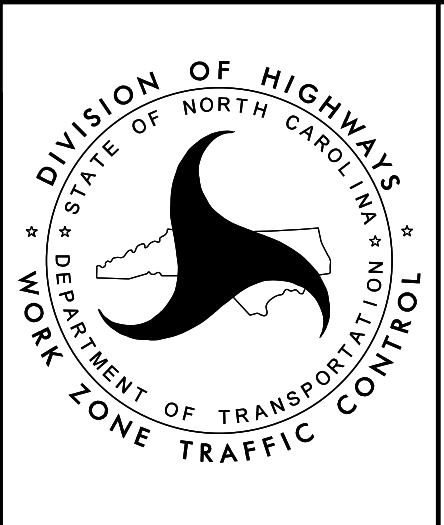
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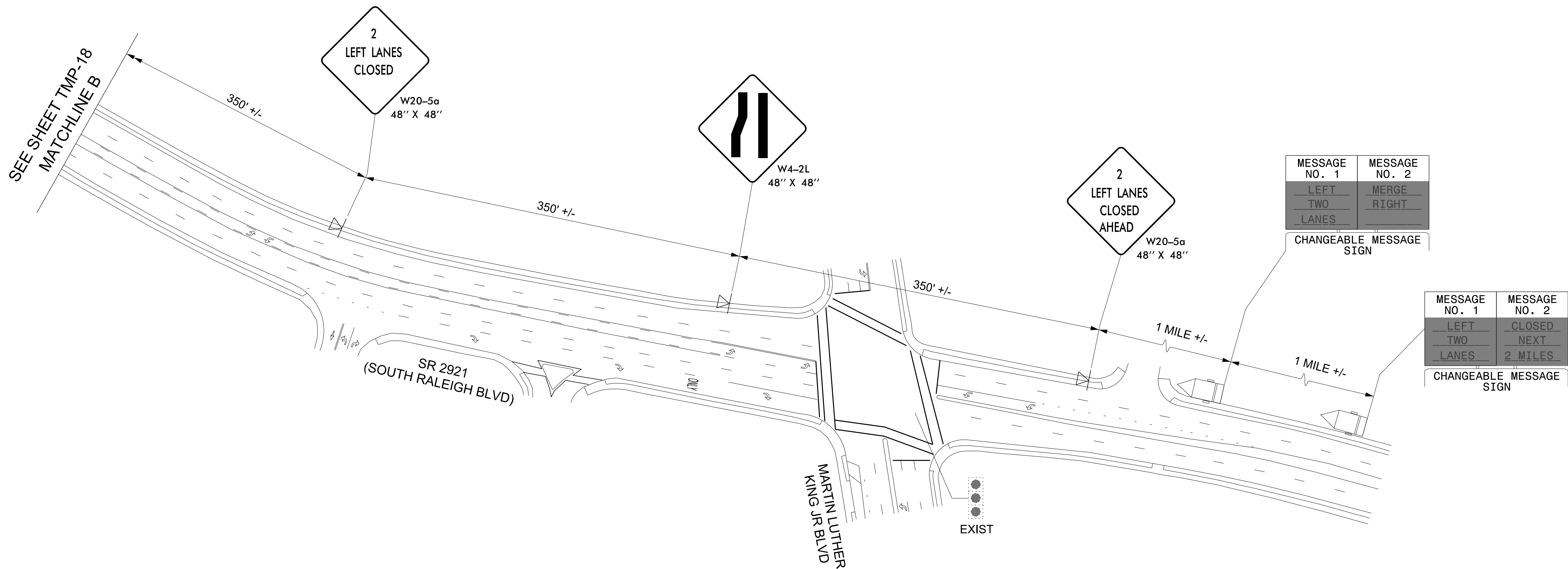
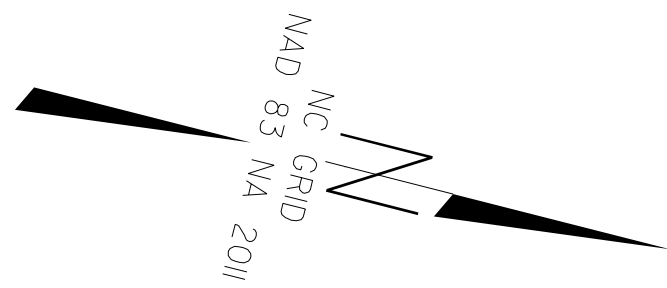
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**PHASE V.A  
DETAIL  
ALTERNATE PHASING**



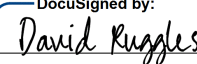


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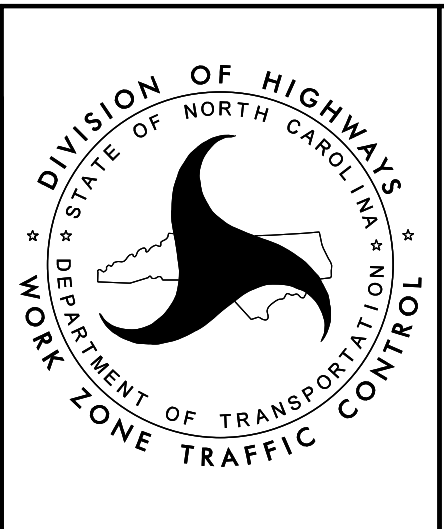
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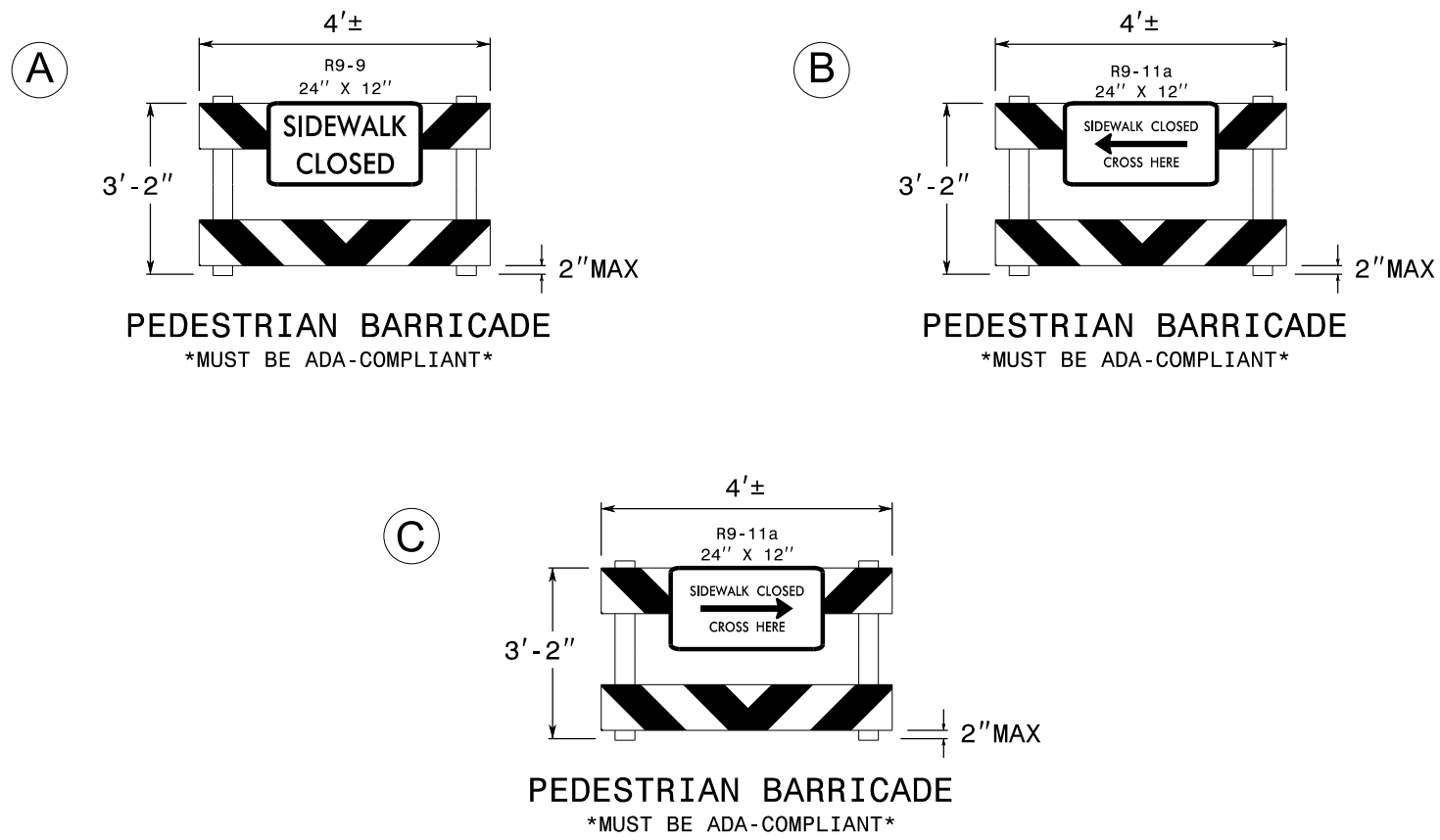
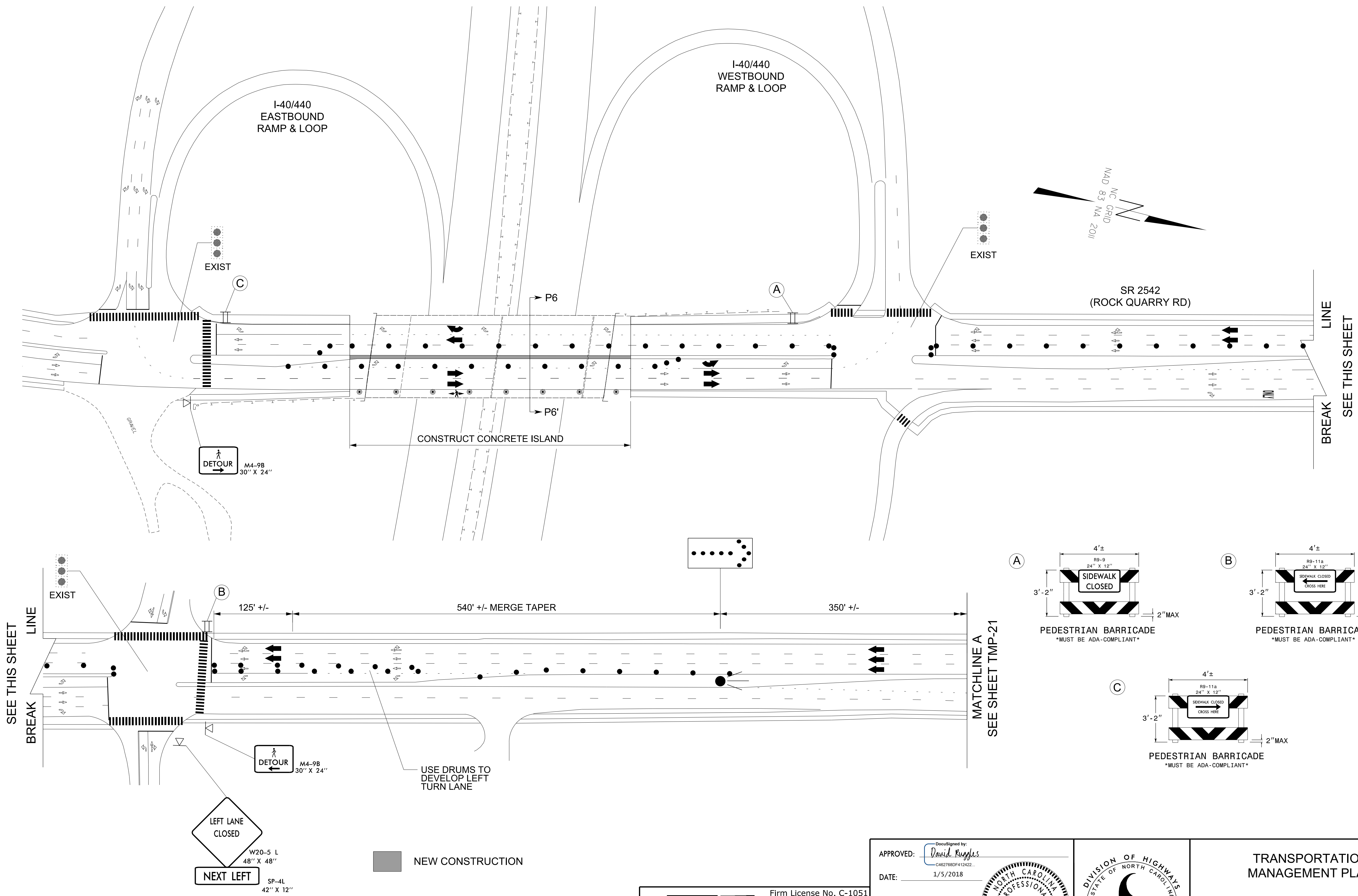
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**PHASE V.A  
DETAIL  
ALTERNATE PHASING**

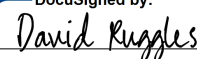


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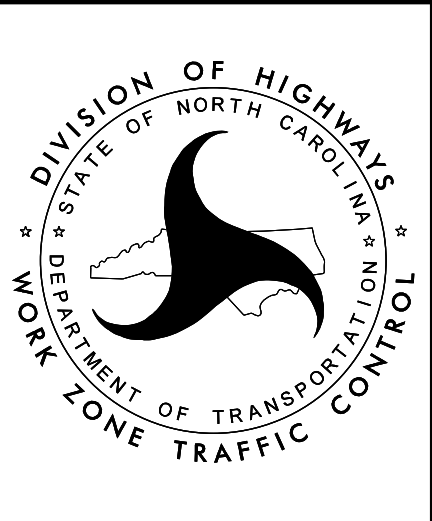
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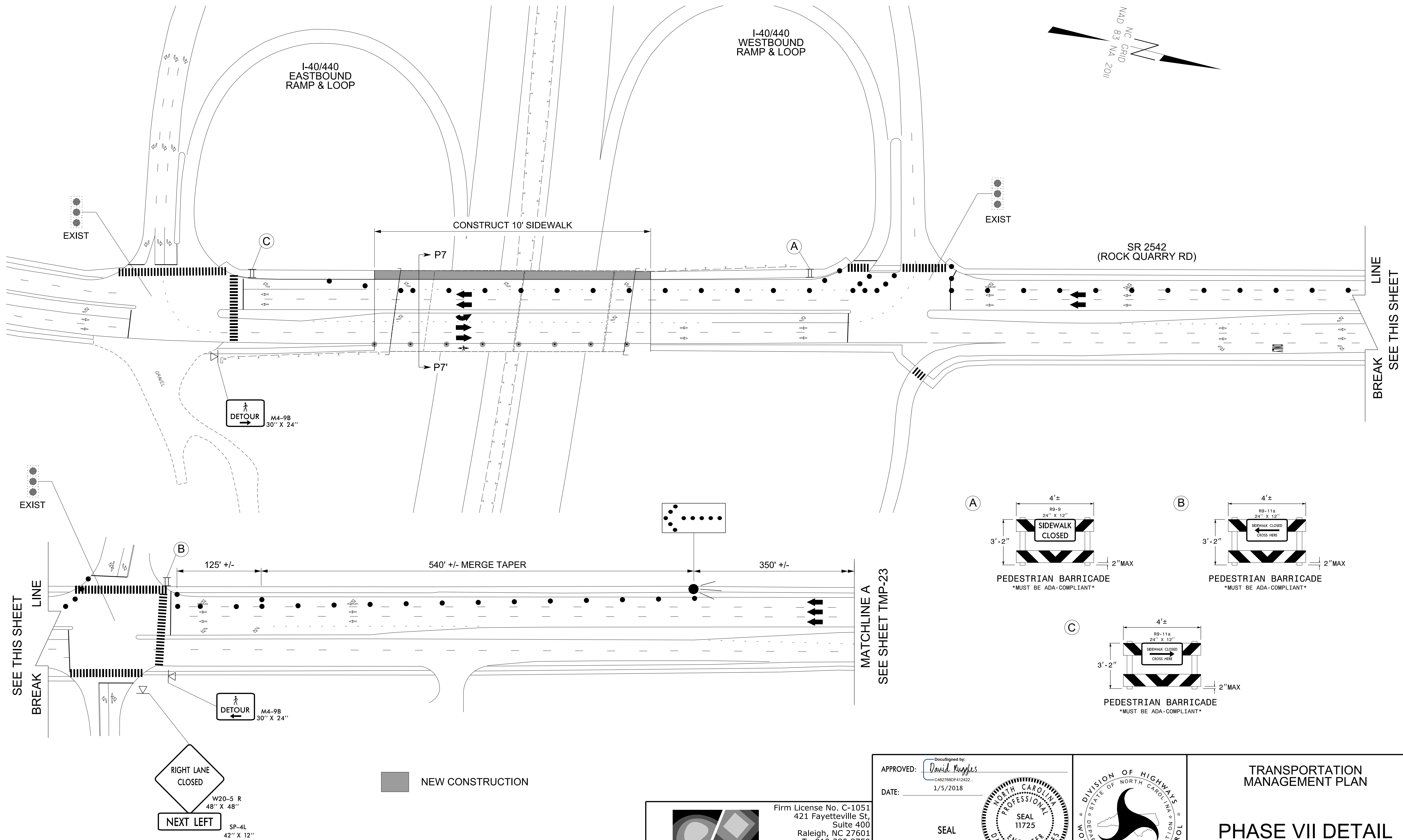


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MANAGEMENT PLAN

**PHASE VI DETAIL**







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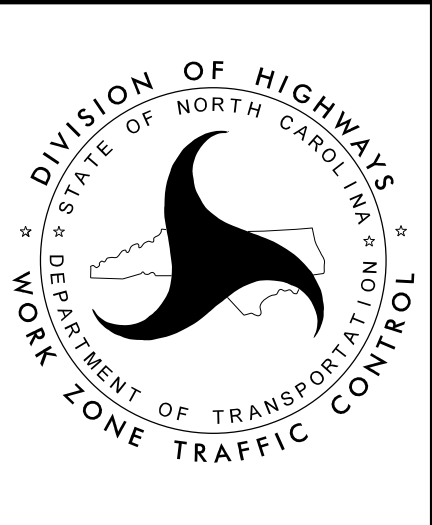
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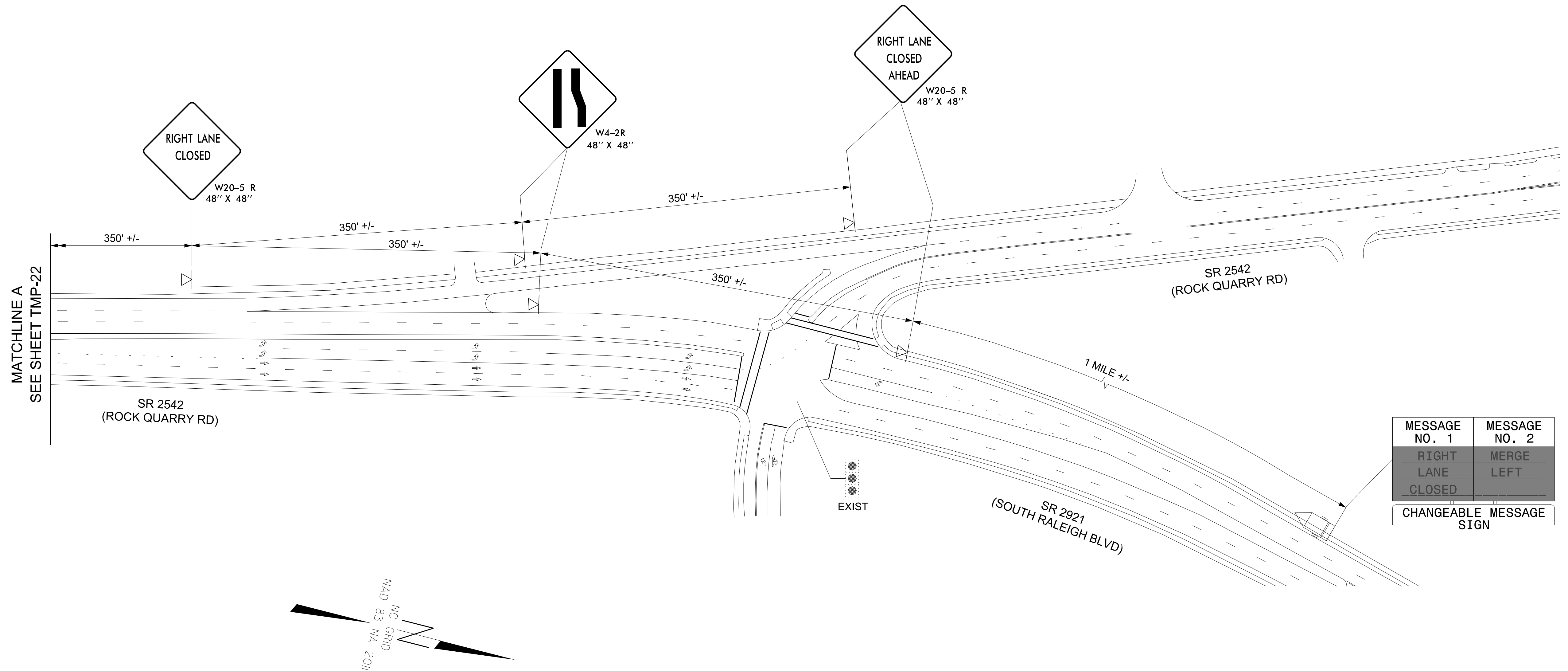
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PHASE VII DETAIL



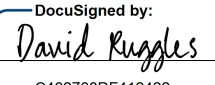
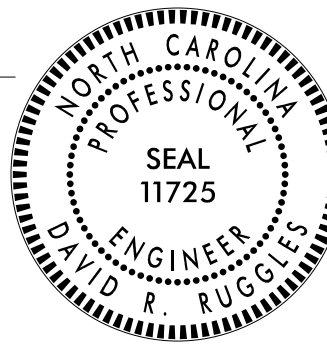


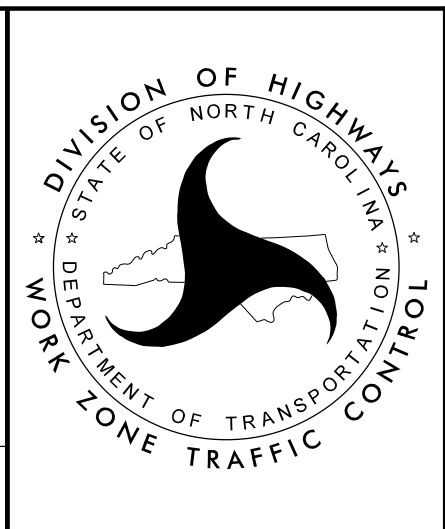
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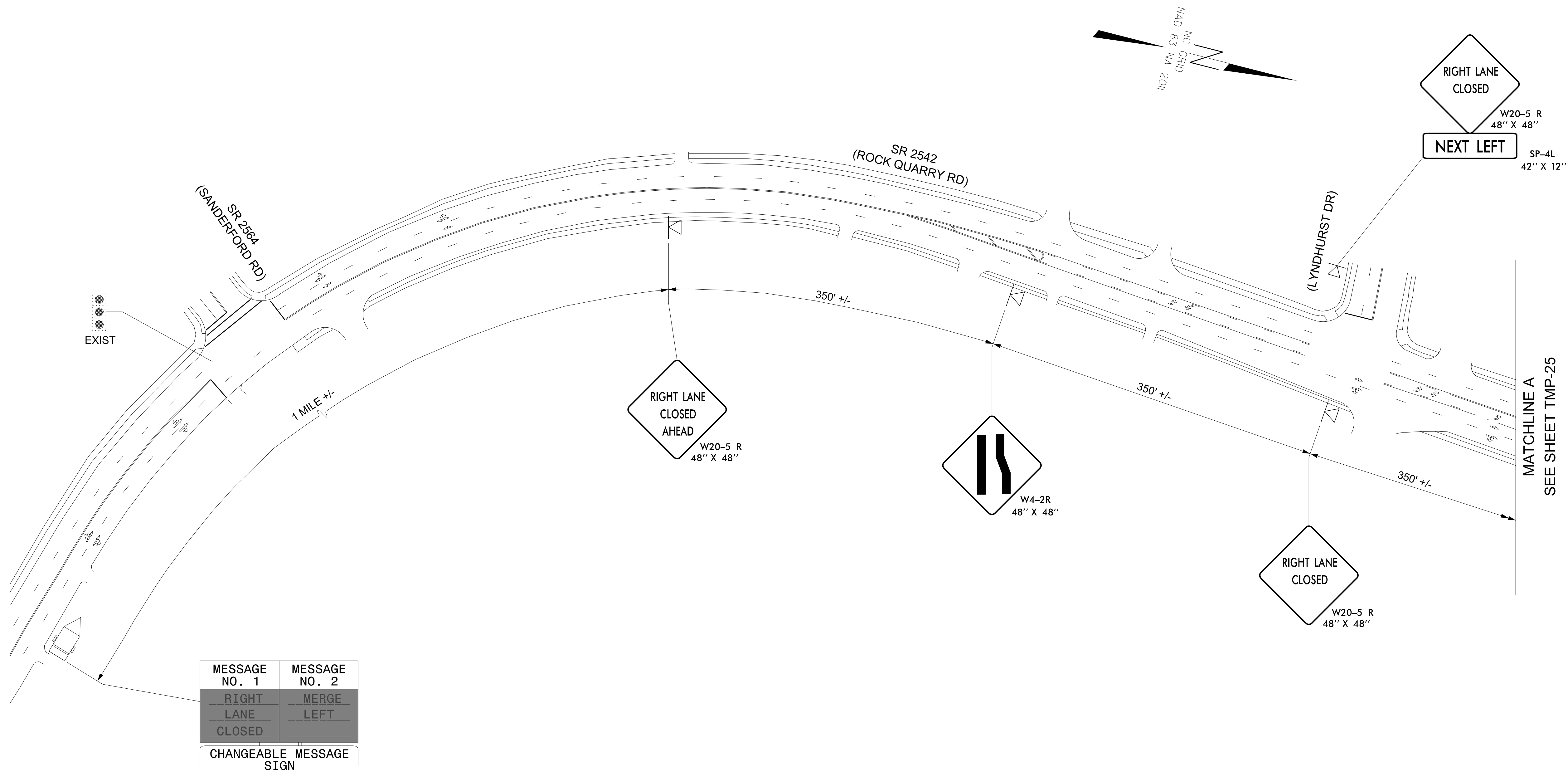
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TRANSPORTATION  
MANAGEMENT PLAN

PHASE VII DETAIL

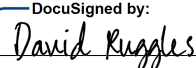


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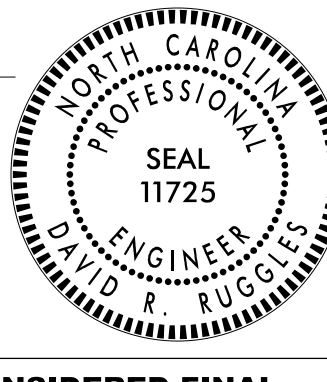
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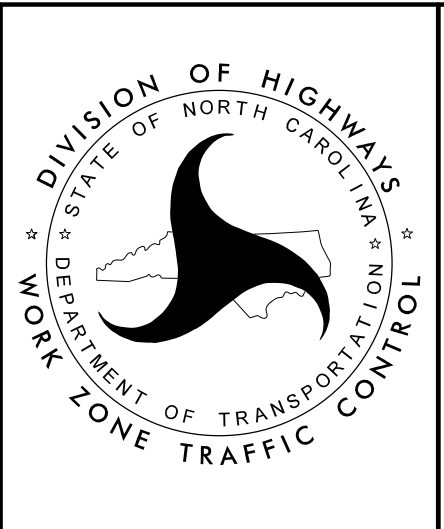
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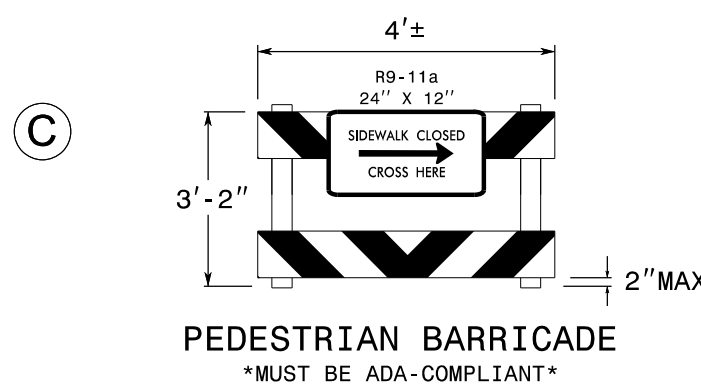
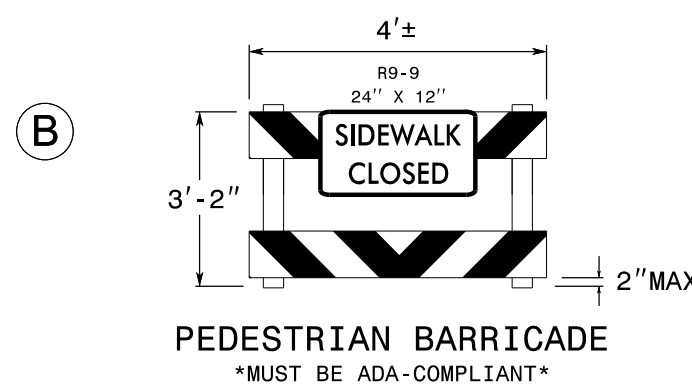
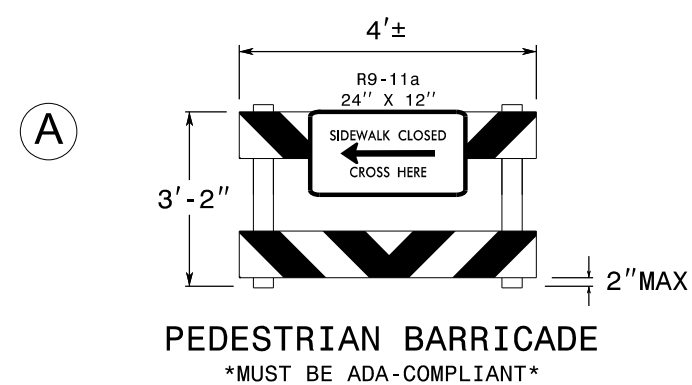
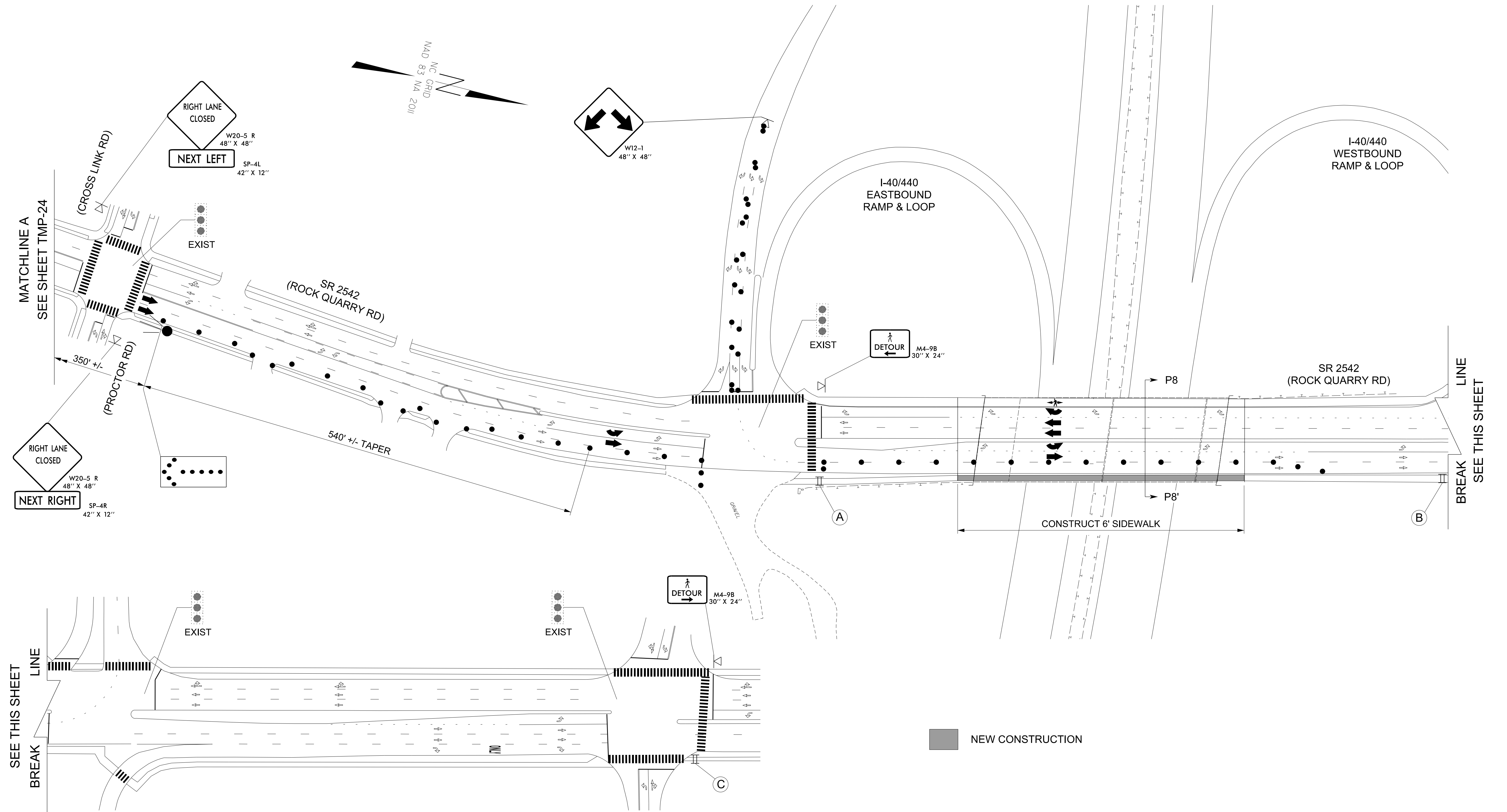




TRANSPORTATION  
MANAGEMENT PLAN

**PHASE VIII DETAIL**





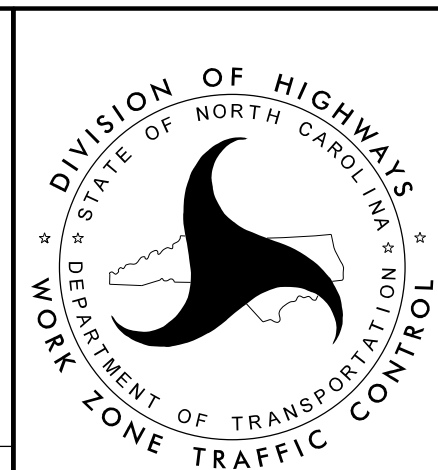
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DATE: 1/5/2018

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TRANSPORTATION  
MANAGEMENT PLAN

PHASE VIII DETAIL

CONTRACT: DE00233 PROJECT: 17BP.5.H.4

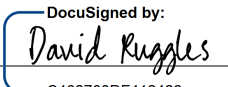
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN  
WAKE COUNTY


LOCATION: BRIDGE NO.316 ON SR 2542 (ROCK QUARRY RD.) OVER I-40/I-440

PROJ. REFERENCE NO.  
17BP.5.H.4

SHEET NO.  
PMP - 1

APPROVED:   
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DATE:  
3/8/2018

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QUANTITIES

PAY ITEM	QUANTITY
COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE II (4")	300 LF
COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE II (8")	90 LF
COLD APPLIED PLASTIC PAVEMENT MARKING CHARACTER, TYPE II	4 EA
COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE II	7 EA
THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	300 LF
THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	200 LF
THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	4 EA
THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	5 EA
SNOWPLOWABLE PAVEMENT MARKERS	50 EA

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM
COLD APPLIED PLASTIC (TYPE II)		
C13	3 FT - 9 FT/SP WHITE MINISKIP (8")	COLD APPLIED PLASTIC SYMBOLS
CC	10 FT WHITE SKIP (4")	
CD	3 FT - 9 FT WHITE MINISKIP (4")	
COLD APPLIED PLASTIC SYMBOLS		
DA	LEFT TURN ARROW	COLD APPLIED PLASTIC CHARACTERS
DB	RIGHT TURN ARROW	
DC	STRAIGHT ARROW	
COLD APPLIED PLASTIC CHARACTERS		
DI	ALPHANUMERIC CHARACTER	THERMOPLASTIC (120 MILS)
T13	3 FT - 9 FT/SP WHITE MINISKIP (8")	
TC	10 FT WHITE SKIP (4")	
TD	3 FT - 9 FT/SP WHITE MINISKIP (4")	THERMOPLASTIC CHARACTERS (120 MILS)
TE	WHITE SOLID LANE LINE (4")	
TR	WHITE SOLID LANE LINE (8")	
THERMOPLASTIC CHARACTERS (120 MILS)		
THERMOPLASTIC SYMBOLS (90 MILS)		
UB	RIGHT TURN ARROW	THERMOPLASTIC CHARACTERS (120 MILS)
UC	STRAIGHT ARROW	
UI	ALPHANUMERIC CHARACTER	
THERMOPLASTIC CHARACTERS (120 MILS)		
PAVEMENT MARKERS		
MB	CRYSTAL & RED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

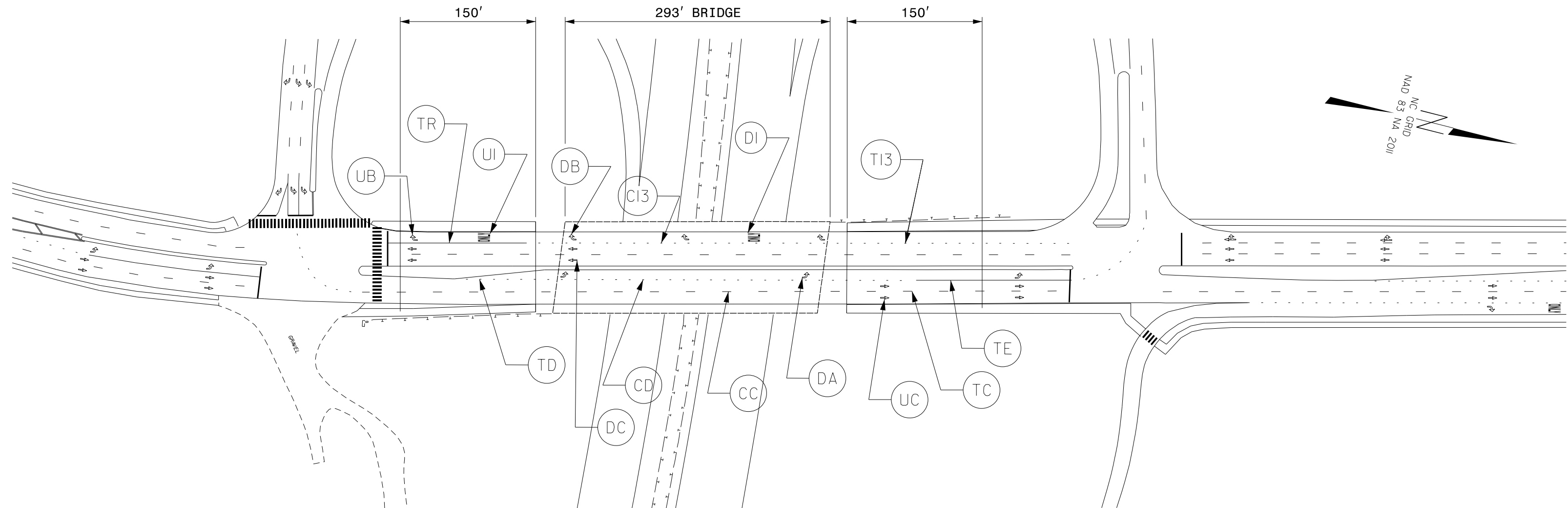
GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 2542 (ROCK QUARRY ROAD)	COLD APPLIED PLASTIC THERMOPLASTIC	SNOW PLOWABLE

- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.
- D) REFER TO NCDOT ROADWAY STANDARD DRAWING NO. 1205.08, SHEETS 1 THRU 8 FOR SYMBOLS AND WORD MESSAGES. COLD APPLIED PAVEMENT MARKINGS AND SYMBOLS TO BE PLACED ON CONCRETE BRIDGE DECK AND APPROACH SLABS. THERMOPLASTIC PAVEMENT MARKINGS AND SYMBOLS TO BE PLACED ON ASPHALT PAVEMENT.
- E) FOR FINAL LANE PATTERN, SEE SHEET TMP-2B.



PLAN PREPARED BY: STEWART

DAVID RUGGLES, PE PROJECT ENGINEER  
ELIZABETH PHELPS, EI PROJECT DESIGN ENGINEER





SCOPE OF WORK

- PARTIALLY REMOVE BRIDGE DECK CONCRETE BY SCARIFICATIONS AND SHOTBLASTING METHODS
- REPLACE EXISTING COMPRESSION JOINTS WITH SILICONE JOINT SEALANT
- DEMOLISH EXISTING RUBBER PLATE EXPANSION JOINTS AND REPLACE WITH MOLDED RUBBER PLATE TYPE EXPANSION JOINTS
- OVERLAY PREPARED BRIDGE DECK WITH POLYMER CONCRETE
- GROOVE POLYESTER POLYMER CONCRETE
- REPLACE SPAN A BEARINGS AT BENT 1 AND SPAN D BEARINGS AT BENT 3
- JACK SPAN A AND SPAN D AND DEMOLISH EXISTING BENT PEDESTALS AT SPAN A AND SPAN D
- CONSTRUCT NEW PEDESTALS AT SPAN A AND SPAN D
- SUBSTRUCTURE REPAIRS USING EPOXY RESIN INJECTION AND SHOTCRETE
- EPOXY COATING OF TOP OF CAPS
- PAINTING EXISTING STEEL GIRDERS
- MILLING
- PAVING
- SIDEWALK CONSTRUCTION

I hereby certify that this structure was rehabilitated according to these plans or as noted therein.

Resident Engineer      Date

ELEVATION

NAD 83

NOTES:  
CONTRACTOR SHOULD BE AWARE THAT THERE ARE POWER LINES AND OTHER UTILITIES IN CLOSE PROXIMITY TO THE BRIDGE. CONTRACTOR SHALL HAVE UTILITIES MARKED BY NC811.ORG BEFORE BEGINNING WORK AND PLAN WORK TO STAY WELL CLEAR OF UTILITIES. THERE IS ALSO AN ELECTRICAL CONDUIT EMBEDDED IN CONCRETE BARRIER THAT SHOULD BE CONSIDERED WHEN PLANNING WORK ACTIVITIES.

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

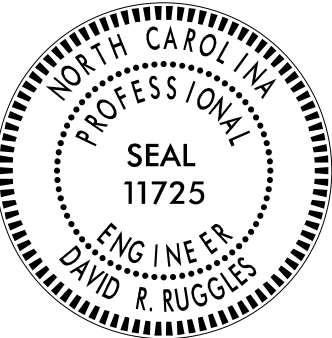
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER I-40  
ON SR 2542 (ROCK QUARRY RD)  
BETWEEN CROSS LINK RD AND  
MARTIN LUTHER KING JR BLVD

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-1
2			4			
TOTAL SHEETS						25

DocuSigned by:  
David Ruggles  
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3/8/2018



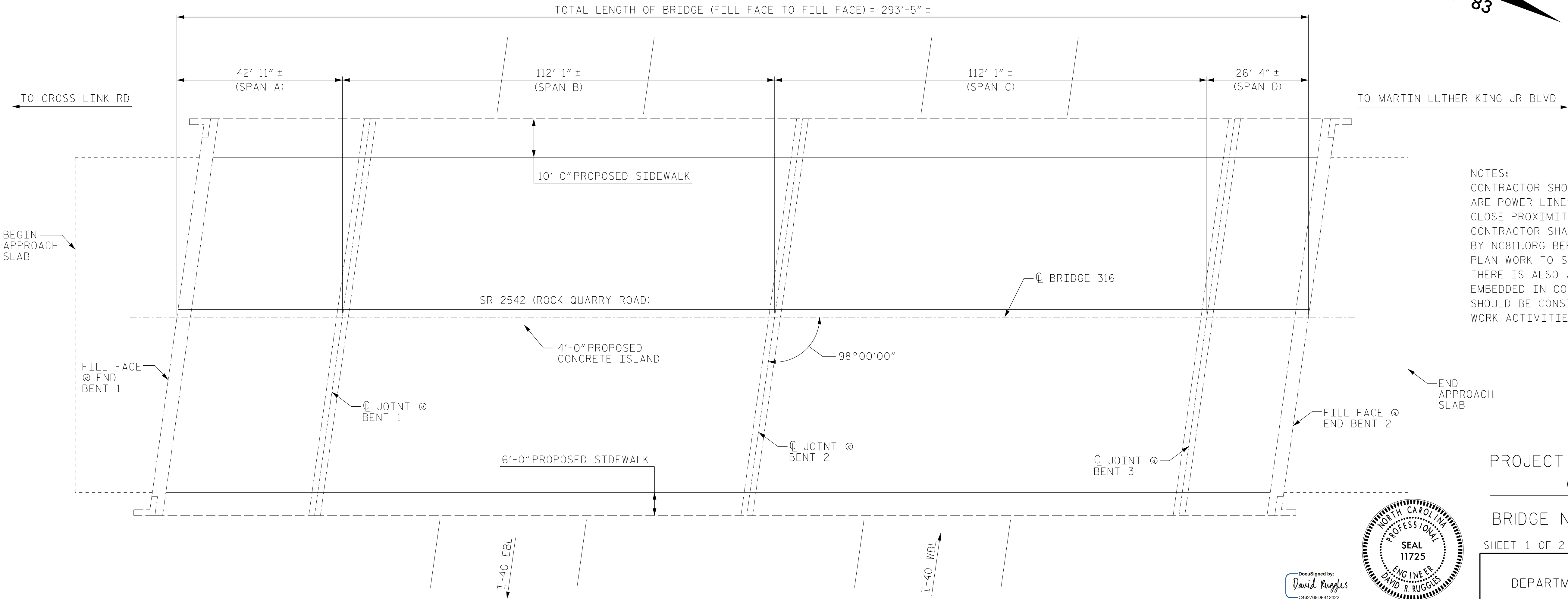
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PLAN



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CHECKED BY: D. RUGGLES      DATE : 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES      DATE : 09-17

3/5/2018  
WAKE 316  
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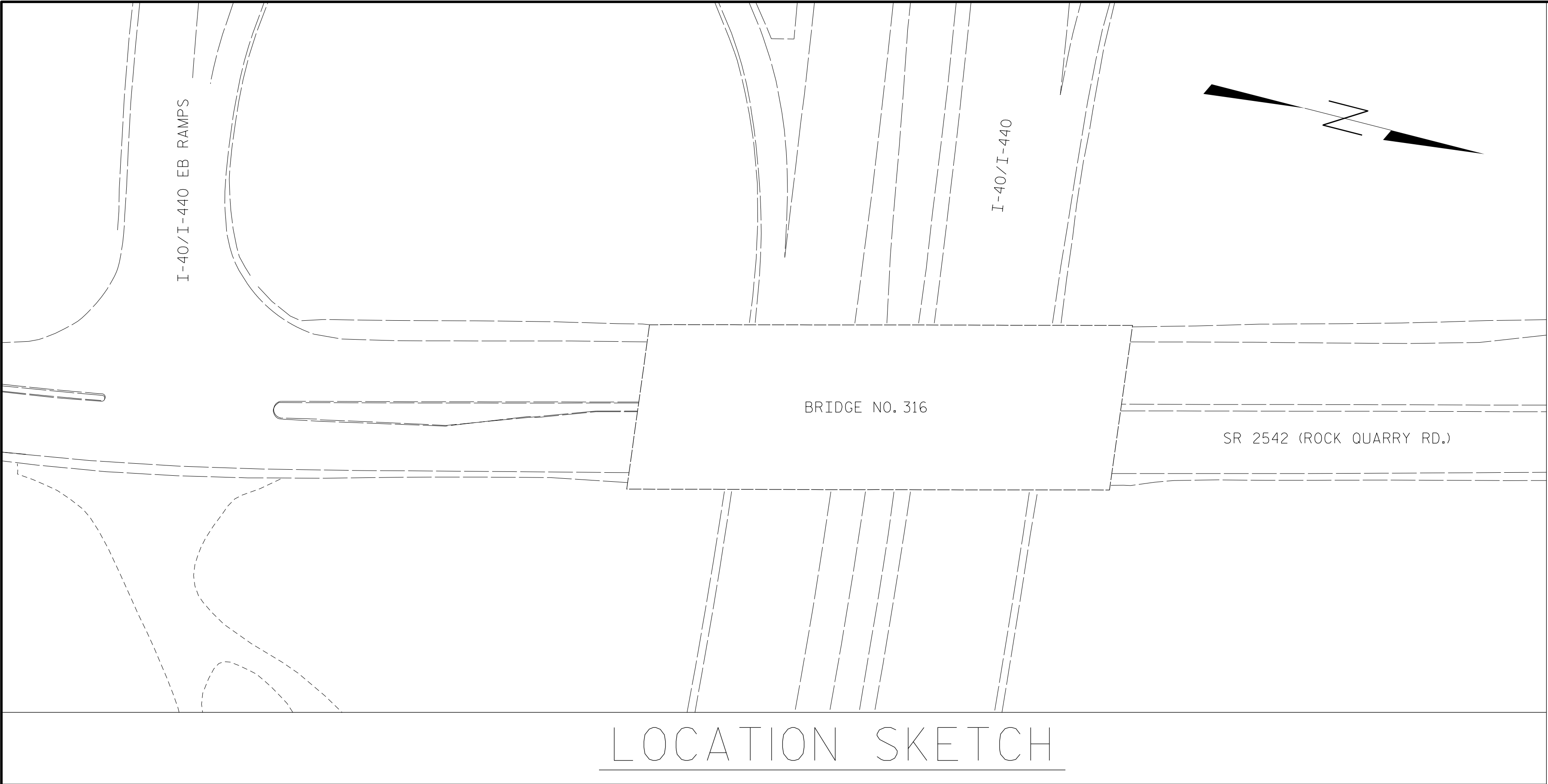


WAKE 316

3/8/2018

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USER:ephelps

DRAWN BY:	E. PHELPS	DATE :	06-17
CHECKED BY:	D. RUGGLES	DATE :	09-17
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE :	09-17



NOTES:

- INFORMATION INDICATED ON THE GENERAL DRAWING AND LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION, ONLY. CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING THE BRIDGES, ROADWAY, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.
- EXISTING DIMENSIONS AND BRIDGE CONDITIONS ARE FROM BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
- FOR OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE, SEE SPECIAL PROVISION.
- FOR POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.
- FOR JOINT REPAIR, SEE SPECIAL PROVISIONS.
- FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINT, SEE SPECIAL PROVISION FOR JOINT REPAIR.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JACKING AT BENTS 1 AND 3, SEE SPECIAL PROVISIONS.
- FOR CAP DEMOLITION AT BENTS 1 & 3, SEE SPECIAL PROVISIONS.
- FOR TEMPORARY STEEL COVER FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.
- SPAN A, SPAN B, SPAN C, AND SPAN D ENDS OF GIRDERS 1 THRU 13 SHALL BE PAINTED IN ACCORDANCE WITH SECTION 442-12 OF THE STANDARD SPECIFICATIONS AND ANY OTHER APPLICABLE SECTIONS. GIRDER ENDS SHALL BE PAINTED FOR A MINIMUM OF 1.5 TIMES THE GIRDER DEPTH.

TOTAL BILL OF MATERIAL																		
	MILLING ASPHALT PAVEMENT 1½" DEPTH	ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B	ASPHALT BINDER FOR PLANT MIX	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	CLEANING AND PAINTING EXISTING WEATHERING STEEL FOR BRIDGE #316	POLLUTION CONTROL	PAINTING CONTAINMENT FOR BRIDGE #316	* CLASS II SURFACE PREPARATION	ELASTOMERIC BEARINGS	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	* CONCRETE DECK REPAIR FOR PPC OVERLAY
	SQ. YDS.	TONS	TONS	SQ. FT.	CU. YDS.	CU. YDS.	LBS.	LBS.	LUMP SUM	LUMP SUM	LUMP SUM	SQ. YDS.	LUMP SUM	CU. FT.	LIN. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.
BRIDGE 316	2,410	250	13	32,185	142.8	5.8	1,656	7,283	LUMP SUM	LUMP SUM	LUMP SUM	2.0	LUMP SUM	200.0	125.0	3,715.9	3,715.9	2.0
TOTAL	2,410	250	13	32,185	142.8	5.8	1,656	7,283	LUMP SUM	LUMP SUM	LUMP SUM	2.0	LUMP SUM	200.0	125.0	3,715.9	3,715.9	2.0

\* CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY ARE NOT ANTICIPATED. TOKEN PAY ITEMS ARE INDICATED FOR PRICING PURPOSES, IN CASE UNANTICIPATED CLASS II SURFACE PREPARATION AREAS ARE ENCOUNTERED.

TOTAL BILL OF MATERIAL									
	PPC MATERIALS	PLACING AND FINISHING PPC OVERLAY	SILICONE JOINT SEALANT	MOLDED RUBBER SEGMENTAL EXPANSION JOINT	JOINT REPAIR	BRIDGE JACKING AT BENTS 1 & 3	TEMPORARY STEEL COVER FOR EXP. JT. SEAL REPAIR	CAP DEMOLITION AT BENTS 1 & 3	EPOXY COATING
	CU. YD.	SQ. YDS.	LIN. FT.	LUMP SUM	SQ. FT.	LUMP SUM	LIN. FT.	LUMP SUM	SQ. FT.
BRIDGE 316	129.0	3,715.9	312.0	LUMP SUM	242.8	LUMP SUM	101.0	LUMP SUM	250
TOTAL	129.0	3,715.9	312.0	LUMP SUM	242.8	LUMP SUM	101.0	LUMP SUM	250

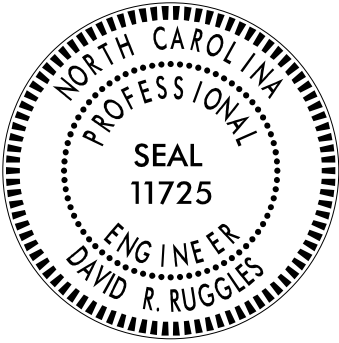
CLEANING AND PAINTING OF GIRDER SEQUENCE:

CLEAN AND PAINT ALL EXPOSED AREAS OF GIRDERS IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS FOR PAINTING EXISTING WEATHERING STEEL STRUCTURE.

DURING ALL CLEANING AND PAINTING OPERATIONS, THE CONTRACTOR SHALL ISOLATE THE WORK AREA WITH APPROPRIATE CONTAINMENT DEVICES IN ORDER TO PREVENT ANY GENERATED DEBRIS FROM CAUSING VIOLATIONS OF CURRENT FEDERAL, STATE AND LOCAL AIR AND WATER POLLUTION REGULATIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LEGAL DISPOSAL OF ALL DEBRIS COLLECTED BY THE CONTAINMENT DEVICES.

DocuSigned by:  
David Ruggles  
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3/8/2018



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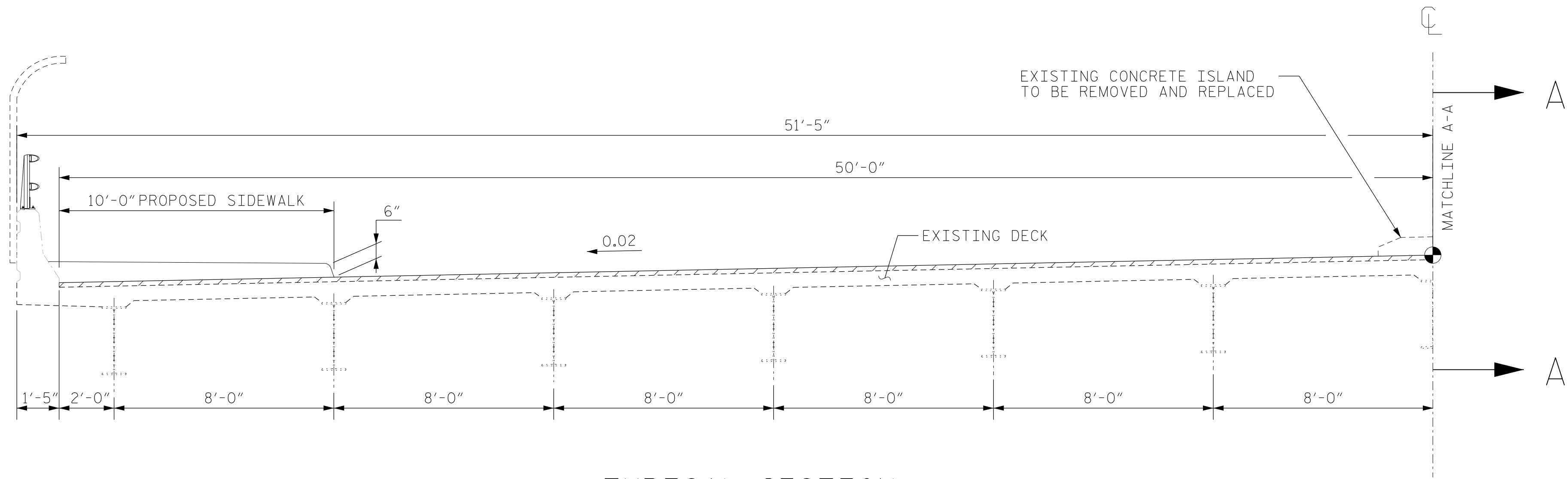
PROJECT NO. 17BP.5.H.4

WAKE COUNTY

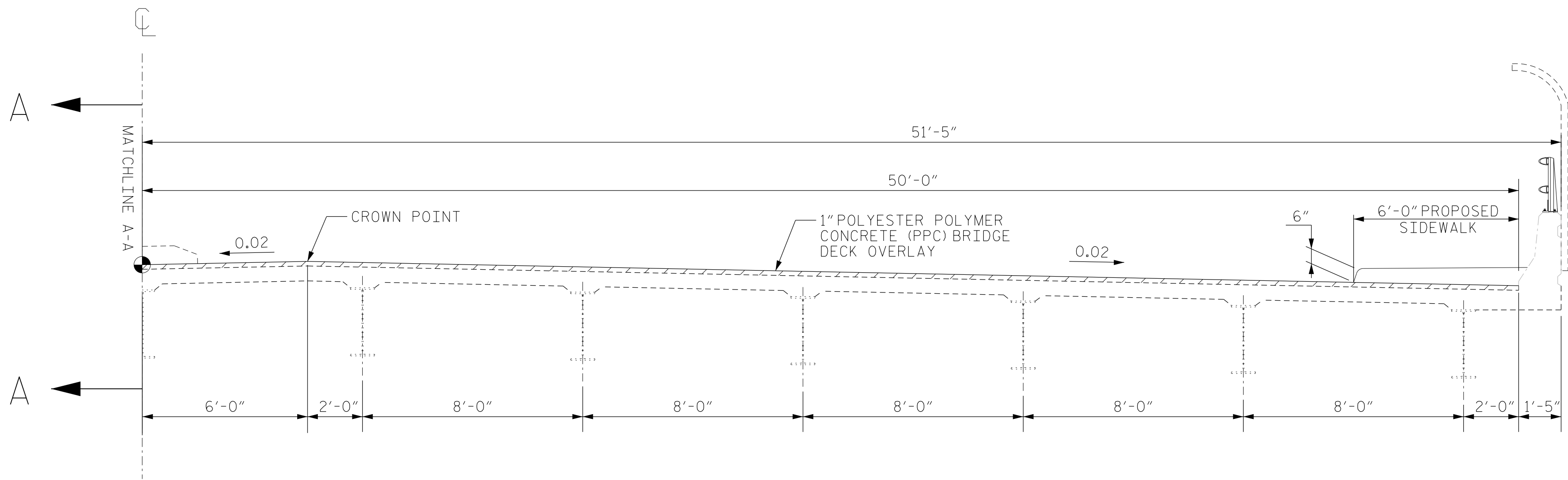
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SHEET 2 OF 2

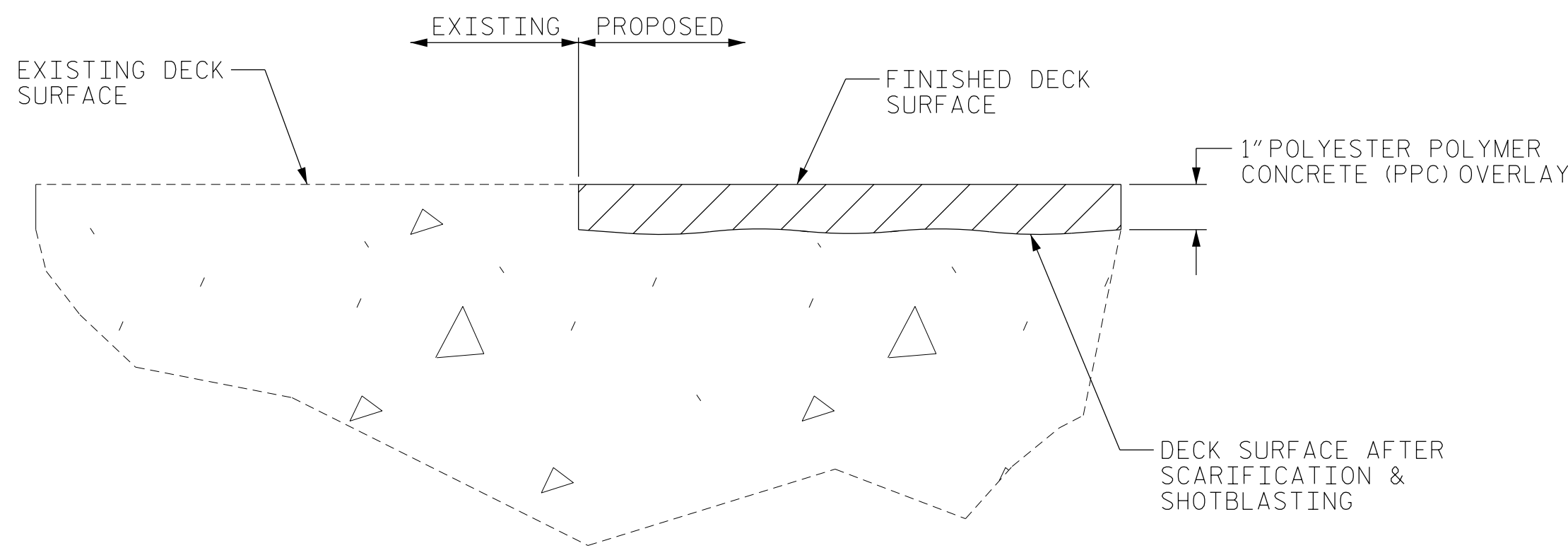
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1			3			TOTAL SHEETS 25
2			4			



TYPICAL SECTION



TYPICAL SECTION



DETAIL OF POLYESTER  
POLYMER CONCRETE OVERLAY

NOTES:

SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF SURFACE PREPARATION AND PPC OVERLAY.

REPAIR OF INTERIOR BENTS 1 AND 3 SHALL NOT BE SIMULTANEOUS WITH BRIDGE DECK REPAIR. BENT REPAIR MUST BE PERFORMED EITHER BEFORE OR AFTER BRIDGE DECK REPAIR. SEE TRAFFIC MANAGEMENT PLANS.

THE EXISTING DECK DRAINS IN SPANS "A" AND "D" ARE TO BE PLUGGED BEFORE CASTING THE PROPOSED SIDEWALKS. METHOD OF PLUGGING DECK DRAINS SHALL BE APPROVED BY THE ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR DECK DRAIN GROUTING. THE ENTIRE COST OF THIS WORK SHALL BE DISTRIBUTED AMONG THE VARIOUS PAY ITEMS.

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316



DocuSigned by:  
David Ruggles  
C462788DF412422...

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

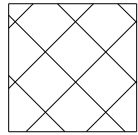
SUPERSTRUCTURE  
TYPICAL SECTION  
& DETAILS

REVISIONS						SHEET NO. S-3
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1			3			TOTAL SHEETS 25
2			4			


DRAWN BY: E. PHELPS DATE : 06-17  
CHECKED BY: D. RUGGLES DATE : 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 09-17



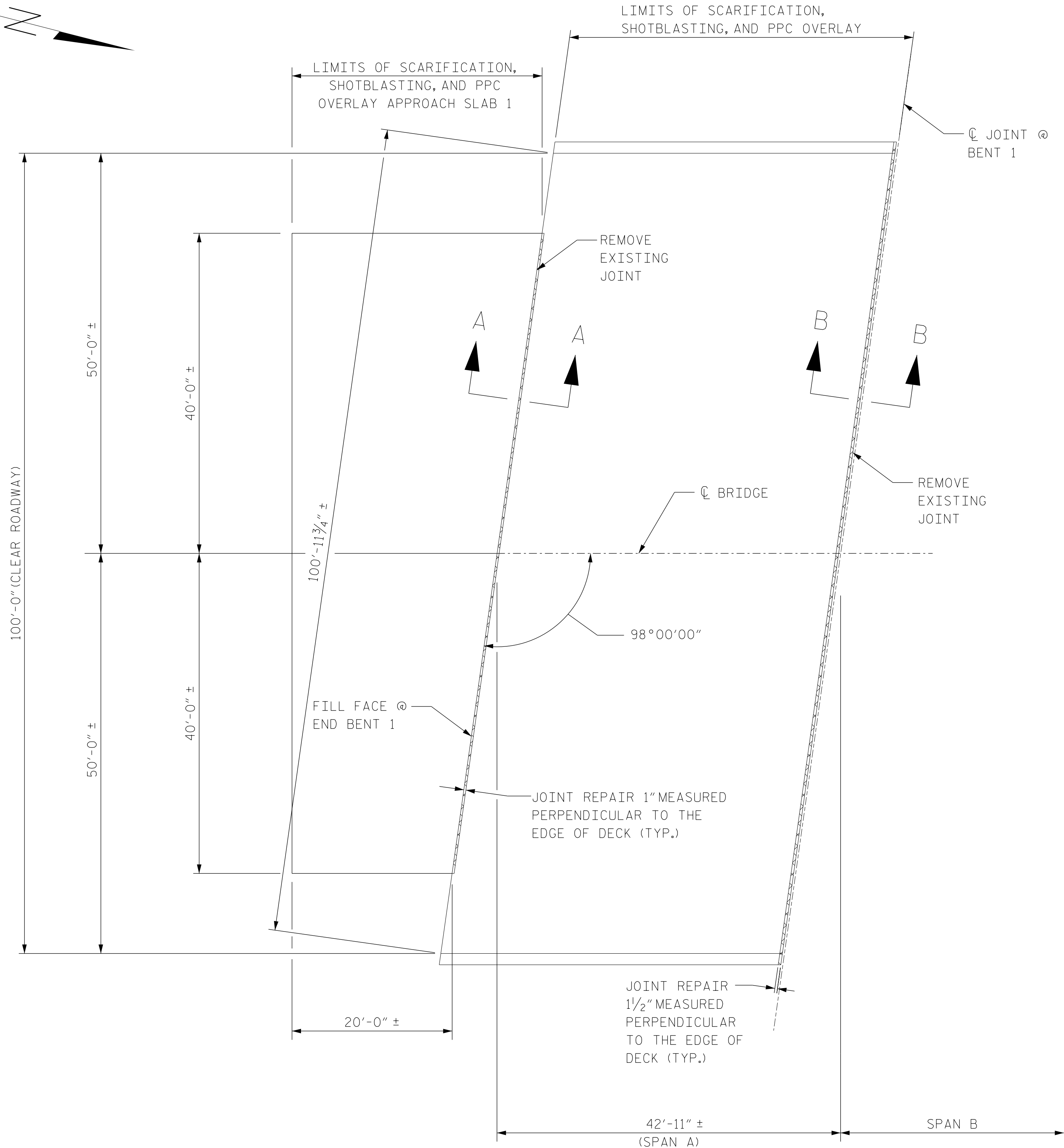
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JOINT REPAIR



SCARIFICATION, SHOTBLASTING, AND  
POLYESTER POLYMER CONCRETE (PPC) OVERLAY



PLAN OF SPAN A AND APPROACH SLAB 1

(FOR SECTION VIEW, SEE "JOINT DETAILS" SHEET S-8)

SPAN "A" QUANTITIES

	ESTIMATE APP. SLAB 1	ESTIMATE SPAN A	ACTUAL APP. SLAB 1	ACTUAL SPAN A
SCARIFYING BRIDGE DECK	227.8 SQ. YDS.	476.9 SQ. YDS.		
CLASS II SURFACE PREPARATION	-	0.5 SQ. YDS.		
CONCRETE DECK REPAIR FOR PPC OVERLAY	-	0.5 SQ. YDS.		
SHOTBLASTING BRIDGE DECK	227.8 SQ. YDS.	476.9 SQ. YDS.		
PPC MATERIALS	7.9 CU. YDS.	16.6 CU. YDS.		
PLACING AND FINISHING PPC OVERLAY	227.8 SQ. YDS.	476.9 SQ. YDS.		
GROOVING BRIDGE FLOORS	2,023.3 SQ. FT.	4,130.6 SQ. FT.		
JOINT REPAIR (END BENT 1)	4.4 SQ. FT.	4.4 SQ. FT.		
JOINT REPAIR (BENT 1)	-	8.7 SQ. FT.		

QUANTITIES IN TABLES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY AFTER REMOVAL OF SNOWPLOWABLE MARKERS AND UNSOUND CONCRETE (MIN. 2" CLEAR TO SAW CUT). SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE "ACTUAL" COLUMN OF THE REPAIR QUANTITY TABLE.

FOR SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATIONS, SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, PPC MATERIALS, AND PLACING AND FINISHING PPC OVERLAY, SEE POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

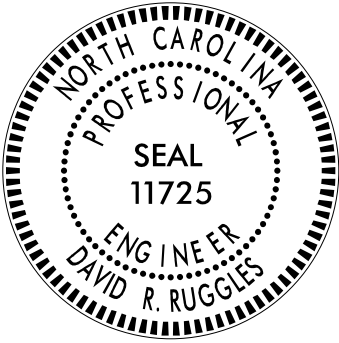
EXISTING JOINTS TO BE REMOVED AND JOINT OPENING CLEANED. PROVIDE TEMPORARY JOINT FOR EACH SECTION OF BRIDGE RECEIVING PPC OVERLAY. AFTER PPC PLACEMENT FOR ALL LANES IS COMPLETED, INSTALL PERMANENT SILICONE JOINT AT END BENT 1 AND BENT 1.

PPC DENOTES POLYESTER POLYMER CONCRETE

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 1 OF 5

DocuSigned by:  
David Ruggles  
C462768DF412422...  
3/8/2018



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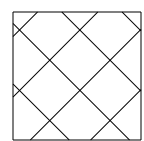
SURFACE PREPARATION

SPAN A

REVISIONS						SHEET NO. S-4
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1			3			TOTAL SHEETS 25
2			4			



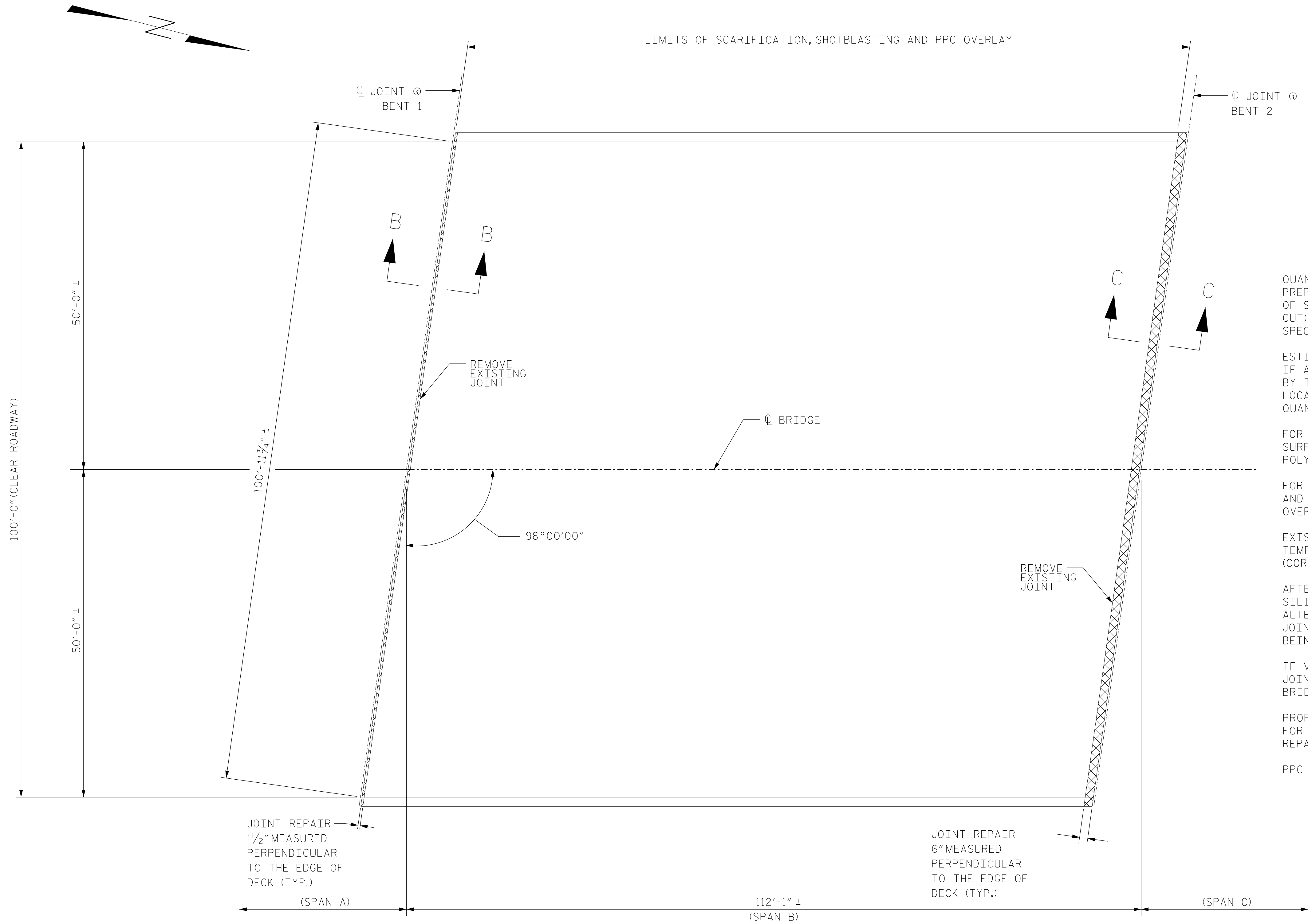
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JOINT REPAIR



SCARIFICATION, SHOT BLASTING, AND  
POLYESTER POLYMER CONCRETE (PPC) OVERLAY



## PLAN OF SPAN B

(FOR SECTION VIEW, SEE "JOINT DETAILS" SHEET S-8)

## SPAN "B" QUANTITIES

	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	1245.4 SQ. YDS.	
CLASS II SURFACE PREPARATION	0.5 SQ. YDS.	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.5 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	1245.4 SQ. YDS.	
PPC MATERIALS	43.2 CU. YDS.	
PLACING AND FINISHING PPC OVERLAY	1245.4 SQ. YDS.	
GROOVING BRIDGE FLOORS	10,791.2 SQ. FT.	
JOINT REPAIR (BENT 1)	8.7 SQ. FT.	
JOINT REPAIR (BENT 2)	52.0 SQ. FT.	

QUANTITIES IN TABLES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY AFTER REMOVAL OF SNOW PLOWABLE MARKERS AND UNSOUND CONCRETE (MIN. 2" CLEAR TO SAW CUT). SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE "ACTUAL" COLUMN OF THE REPAIR QUANTITY TABLE.

FOR SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, PPC MATERIALS, AND PLACING AND FINISHING PPC OVERLAY, SEE POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

EXISTING JOINTS TO BE REMOVED AND JOINT OPENING CLEANED. PROVIDE TEMPORARY JOINT FOR EACH SECTION OF BRIDGE RECEIVING OVERLAY (CORRESPONDING TO PHASES).

AFTER PPC PLACEMENT FOR ALL LANES IS COMPLETED, INSTALL PERMANENT SILICONE JOINT AT BENT 1 AND MOLDED RUBBER JOINT AT BENT 2. ALTERNATELY AT BENT 2, CONTRACTOR MAY INSTALL PERMANENT RUBBER PLATE JOINTS WITH STRIP LENGTHS CORRESPONDING TO WIDTH OF PPC OVERLAY BEING PLACED IN THAT PHASE.

IF MOLDED RUBBER JOINT IS INSTALLED IN PHASES, CONTRACTOR MUST BEGIN JOINT INSTALLATION AT OUTSIDE OF BRIDGE AND WORK TOWARDS CENTER OF BRIDGE.

PROPOSED TEMPORARY JOINT AT BENT 2 TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FOR TEMPORARY STEEL COVER FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

PPC DENOTES POLYESTER POLYMER CONCRETE

PROJECT NO. 17BP.5.H.4

WAKE COUNTY

BRIDGE NO. 316

SHEET 2 OF 5

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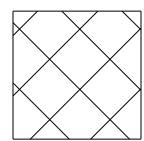
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SURFACE PREPARATION

## SPAN B

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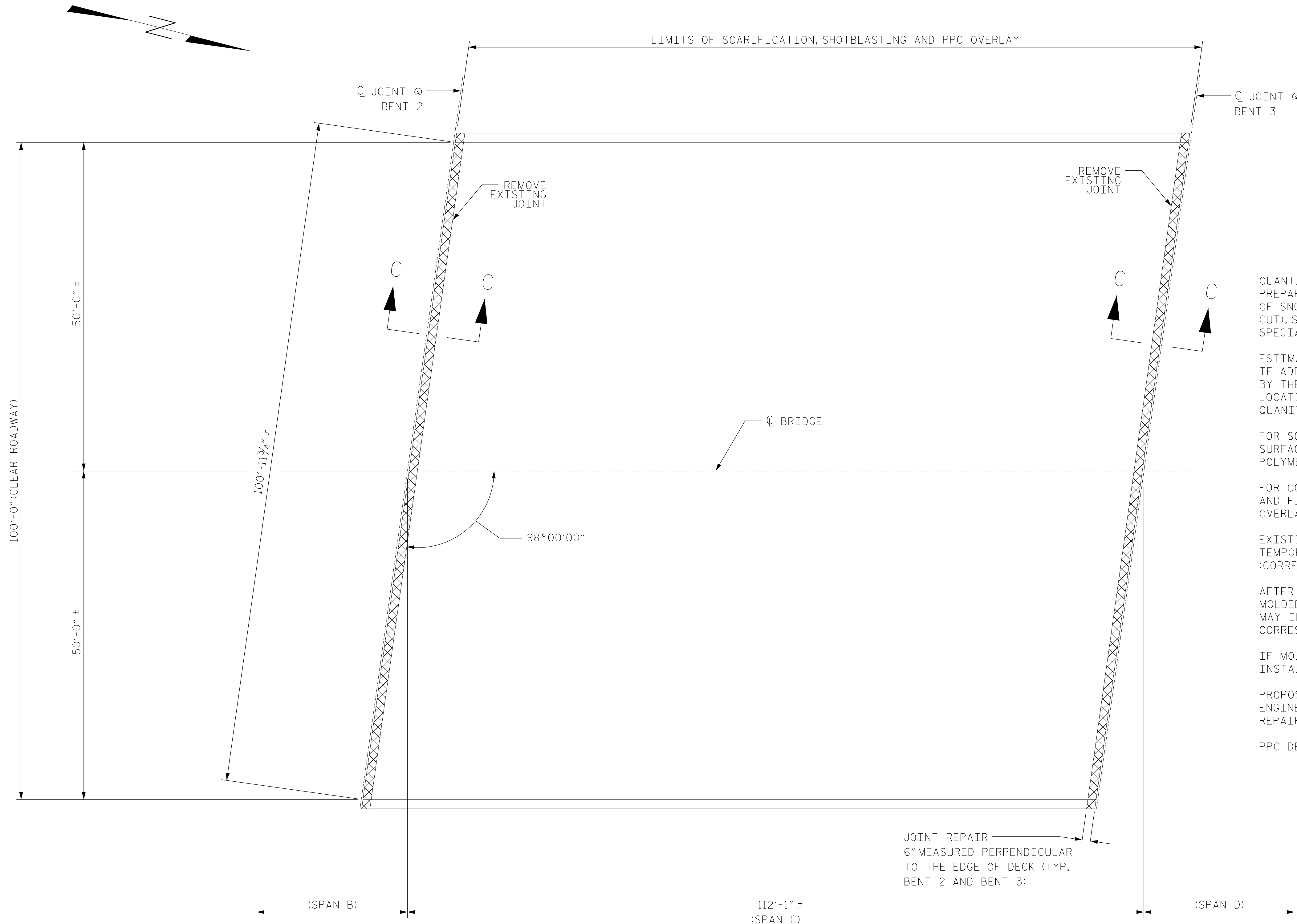
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JOINT REPAIR



SCARIFICATION, SHOT BLASTING, AND  
POLYESTER POLYMER CONCRETE (PPC) OVERLAY



SPAN "C" QUANTITIES		
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	1245.4 SQ. YDS.	
CLASS II SURFACE PREPARATION	0.5 SQ. YDS.	
CONCRETE DECK REPAIR FOR PPC OVERLAY	0.5 SQ. YDS.	
SHOTBLASTING BRIDGE DECK	1245.4 SQ. YDS.	
PPC MATERIALS	43.2 CU. YDS.	
PLACING AND FINISHING PPC OVERLAY	1245.4 SQ. YDS.	
GROOVING BRIDGE FLOORS	10,742.7 SQ. FT.	
JOINT REPAIR (BENT 2)	52.0 SQ. FT.	
JOINT REPAIR (BENT 3)	52.0 SQ. FT.	

QUANTITIES IN TABLES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY AFTER REMOVAL OF SNOW PLOWABLE MARKERS AND UNSOUND CONCRETE (MIN. 2" CLEAR TO SAW CUT). SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE "ACTUAL" COLUMN OF THE REPAIR QUANTITY TABLE.

FOR SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, PPC MATERIALS, AND PLACING AND FINISHING PPC OVERLAY, SEE POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

EXISTING JOINTS TO BE REMOVED AND JOINT OPENING CLEANED. PROVIDE TEMPORARY JOINT FOR EACH SECTION OF BRIDGE RECEIVING OVERLAY (CORRESPONDING TO PHASES).

AFTER PPC PLACEMENT FOR ALL LANES IS COMPLETED, INSTALL PERMANENT MOLDED RUBBER JOINT AT BENT 2 AND BENT 3. ALTERNATELY, THE CONTRACTOR MAY INSTALL PERMANENT MOLDED RUBBER JOINTS WITH STRIP LENGTHS CORRESPONDING TO WIDTH OF PPC OVERLAY BEING PLACED IN THAT PHASE.

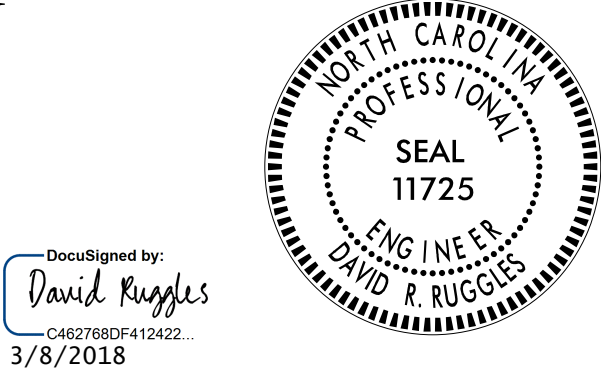
IF MOLDED RUBBER JOINT IS INSTALLED IN PHASES, CONTRACTOR MUST BEGIN JOINT INSTALLATION AT OUTSIDE OF BRIDGE AND WORK TOWARDS CENTER OF BRIDGE.

PROPOSED TEMPORARY JOINTS AT BENT 2 AND BENT 3 TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FOR TEMPORARY STEEL COVER FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

PPC DENOTES POLYESTER POLYMER CONCRETE

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 3 OF 5



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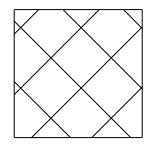
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RALEIGH  
SURFACE PREPARATION  
SPAN C

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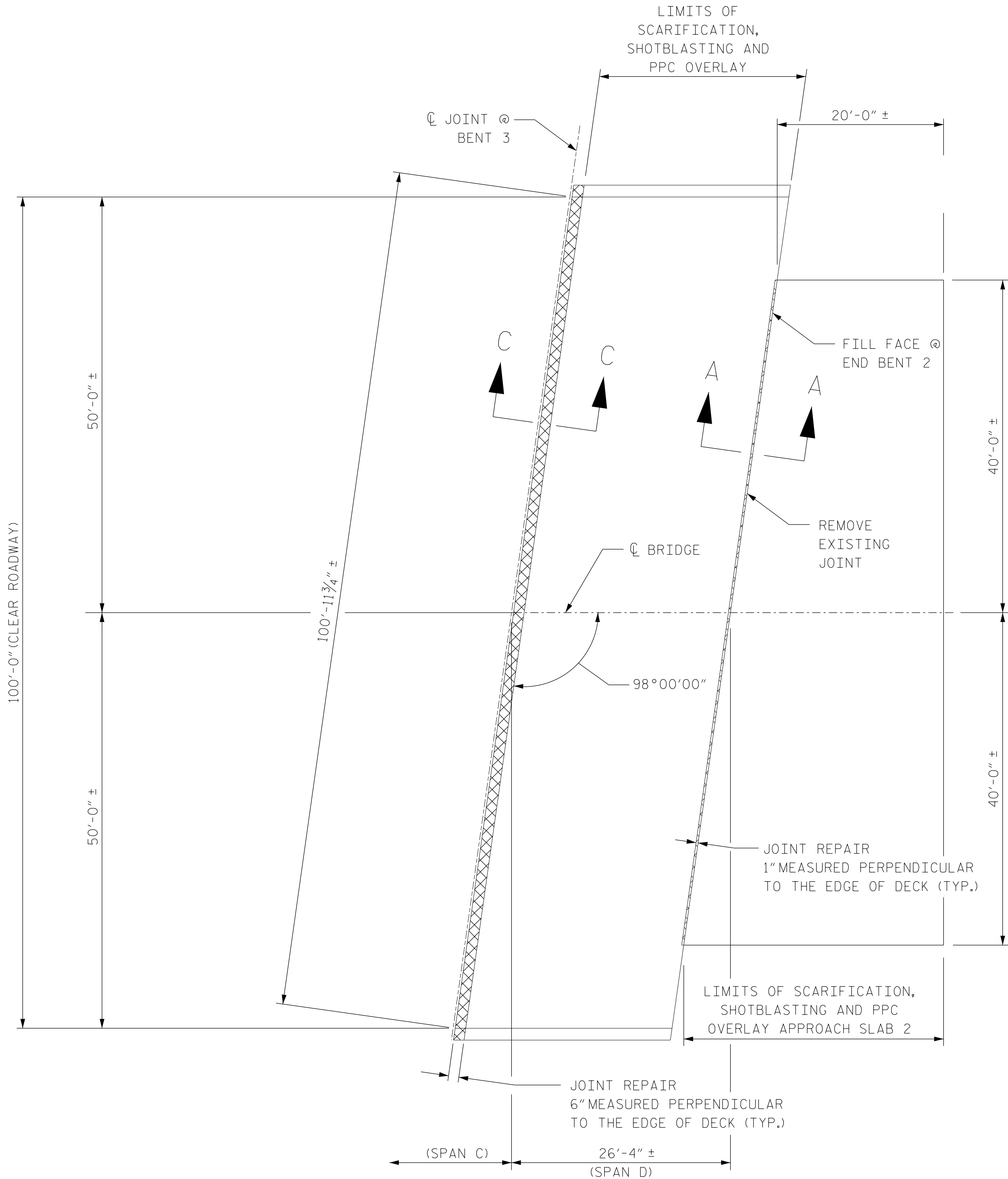
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JOINT REPAIR



SCARIFICATION, SHOTBLASTING, AND  
POLYESTER POLYMER CONCRETE (PPC) OVERLAY



PLAN OF SPAN D AND APPROACH SLAB 2

(FOR SECTION VIEW, SEE "JOINT DETAILS" SHEET S-8)

SPAN "D" QUANTITIES

	ESTIMATE APP. SLAB 2	ESTIMATE SPAN D	ACTUAL APP. SLAB 2	ACTUAL SPAN D
SCARIFYING BRIDGE DECK	227.8 SQ. YDS.	292.6 SQ. YDS.		
CLASS II SURFACE PREPARATION	-	0.5 SQ. YDS.		
CONCRETE DECK REPAIR FOR PPC OVERLAY	-	0.5 SQ. YDS.		
SHOTBLASTING BRIDGE DECK	227.8 SQ. YDS.	292.6 SQ. YDS.		
PPC MATERIALS	7.9 CU. YDS.	10.2 CU. YDS.		
PLACING AND FINISHING PPC OVERLAY	227.8 SQ. YDS.	292.6 SQ. YDS.		
GROOVING BRIDGE FLOORS	2,023.3 SQ. FT.	2,473.5 SQ. FT.		
JOINT REPAIR (BENT 3)	-	52.0 SQ. FT.		
JOINT REPAIR (END BENT 2)	4.4 SQ. FT.	4.4 SQ. FT.		

QUANTITIES IN TABLES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY AFTER REMOVAL OF SNOW PLOWABLE MARKERS AND UNSOUND CONCRETE (MIN. 2" CLEAR TO SAW CUT). SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE "ACTUAL" COLUMN OF THE REPAIR QUANTITY TABLE.

FOR SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK AND CLASS II SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, PPC MATERIALS, AND PLACING AND FINISHING PPC OVERLAY, SEE POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISIONS.

EXISTING JOINTS TO BE REMOVED AND JOINT OPENING CLEANED. PROVIDE TEMPORARY JOINT FOR EACH SECTION OF BRIDGE RECEIVING OVERLAY (CORRESPONDING TO PHASES).

AFTER PPC PLACEMENT FOR ALL LANES IS COMPLETED, INSTALL PERMANENT MOLDED RUBBER JOINT AT BENT 3 AND PERMANENT SILICONE JOINT AT END BENT 2. ALTERNATELY, THE CONTRACTOR MAY INSTALL PERMANENT MOLDED RUBBER JOINTS WITH STRIP LENGTHS CORRESPONDING TO WIDTH OF PPC OVERLAY BEING PLACED AT THAT TIME.

IF MOLDED RUBBER JOINT IS INSTALLED IN PHASES, CONTRACTOR MUST BEGIN JOINT INSTALLATION AT OUTSIDE OF BRIDGE AND WORK TOWARDS CENTER OF BRIDGE.

PROPOSED TEMPORARY JOINT AT BENT 3 TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FOR TEMPORARY STEEL COVER FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

PPC DENOTES POLYESTER POLYMER CONCRETE

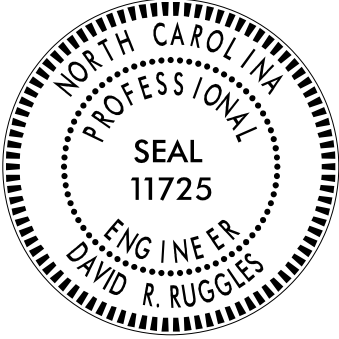
PROJECT NO. 17BP.5.H.4

WAKE COUNTY

BRIDGE NO. 316

SHEET 4 OF 5

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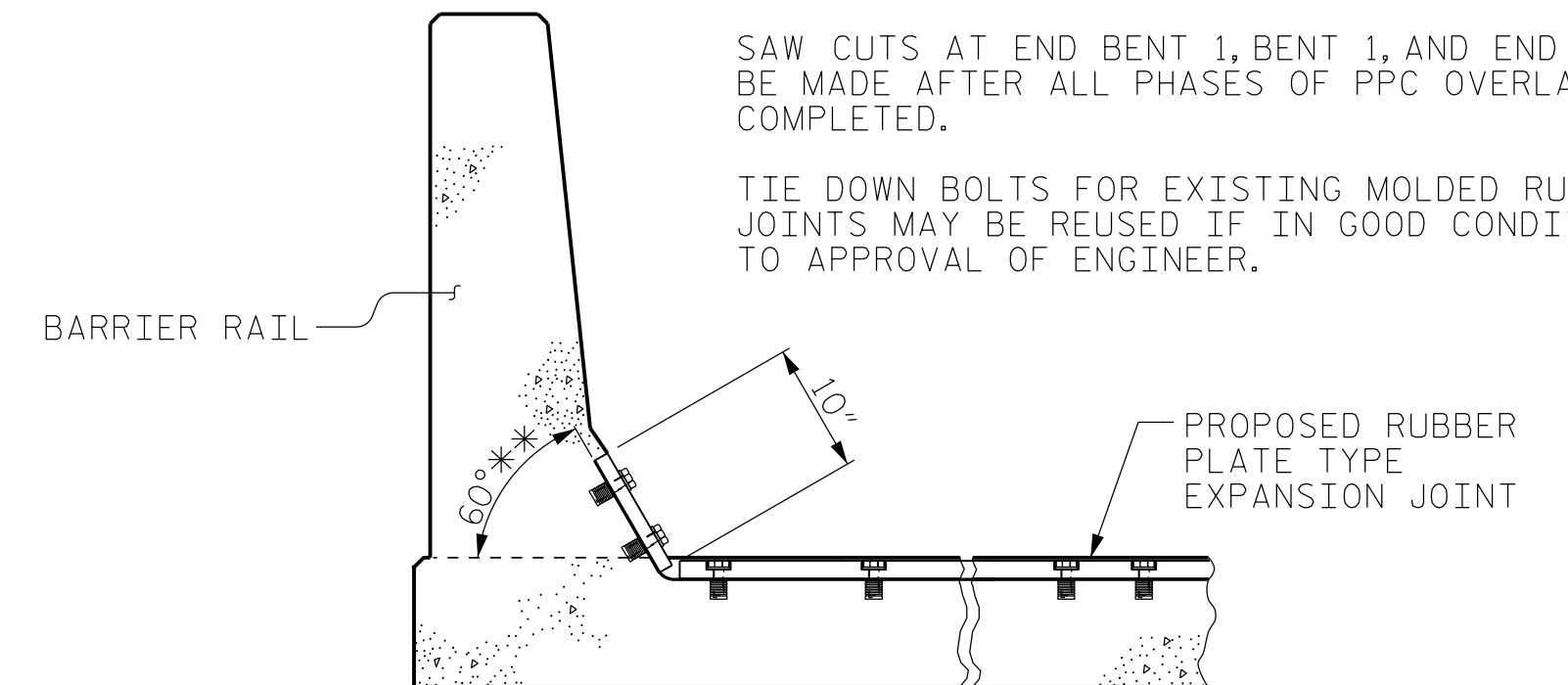
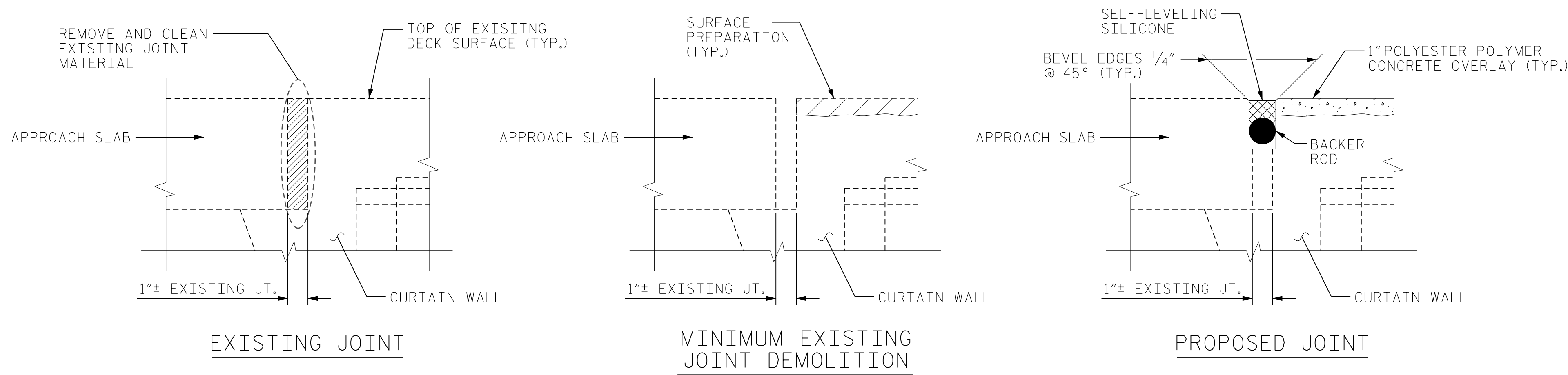
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RALEIGH

SURFACE PREPARATION

SPAN D

REVISIONS						SHEET NO. S-7
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2			4			





NOTES:

CONTRACTOR SHALL FIELD VERIFY THE EXISTING FORMED OPENING PRIOR TO OBTAINING JOINT MATERIAL.

FOR SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

UNLESS NOTED OTHERWISE RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

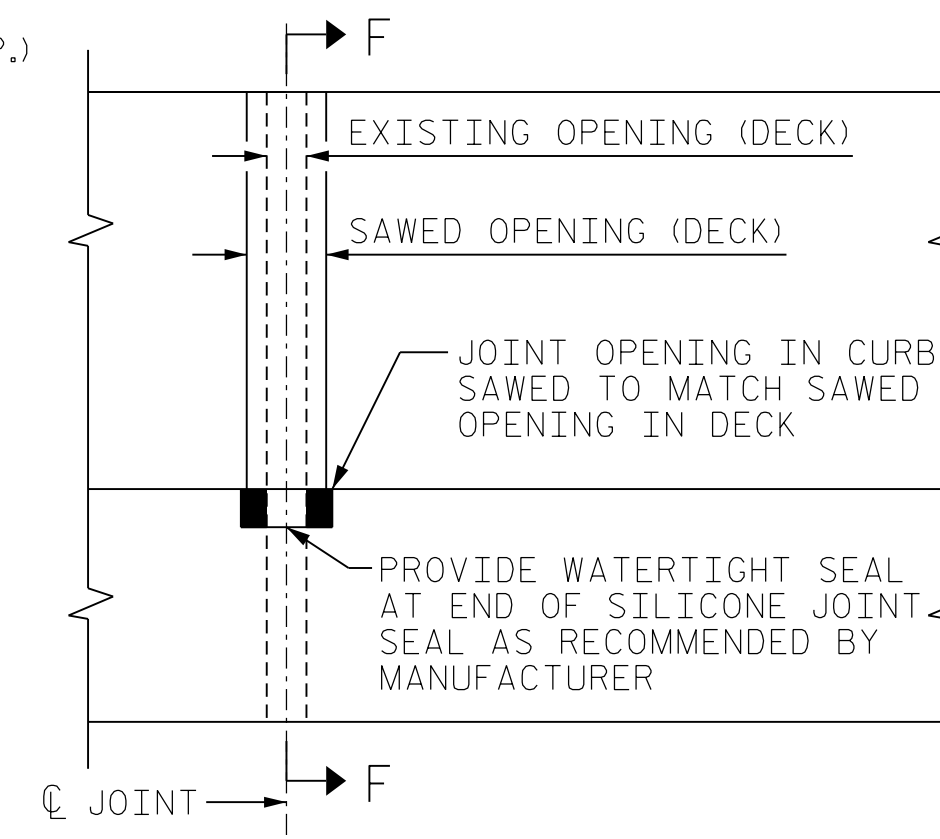
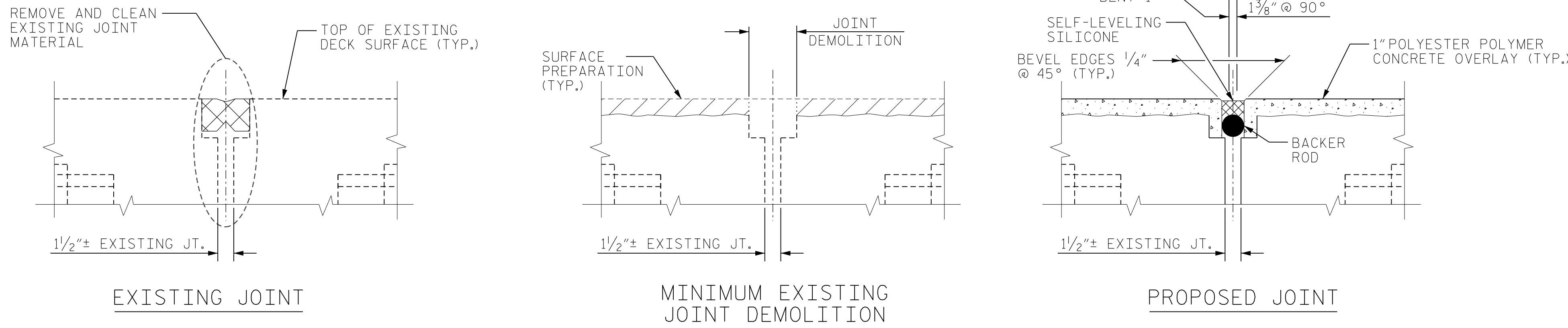
ALL EXPOSED ENDS OF CUT BARS SHALL BE COATED WITH EPOXY PRIOR TO THE NEW JOINT MATERIAL INSTALLATION.

SAW CUTS AT END BENT 1, BENT 1, AND END BENT 2 SHALL BE MADE AFTER ALL PHASES OF PPC OVERLAY HAVE BEEN COMPLETED.

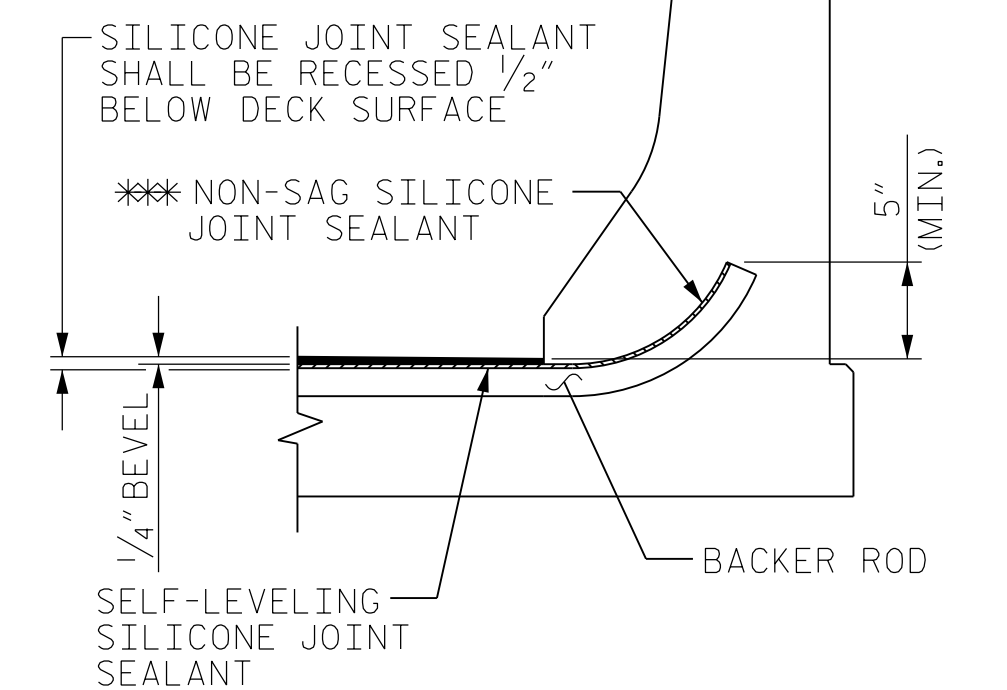
TIE DOWN BOLTS FOR EXISTING MOLDED RUBBER EXPANSION JOINTS MAY BE REUSED IF IN GOOD CONDITION SUBJECT TO APPROVAL OF ENGINEER.

### SECTION THRU JOINT AT BARRIER RAIL

\*\* 60° ANGLE BREAK TO BE FIELD VERIFIED

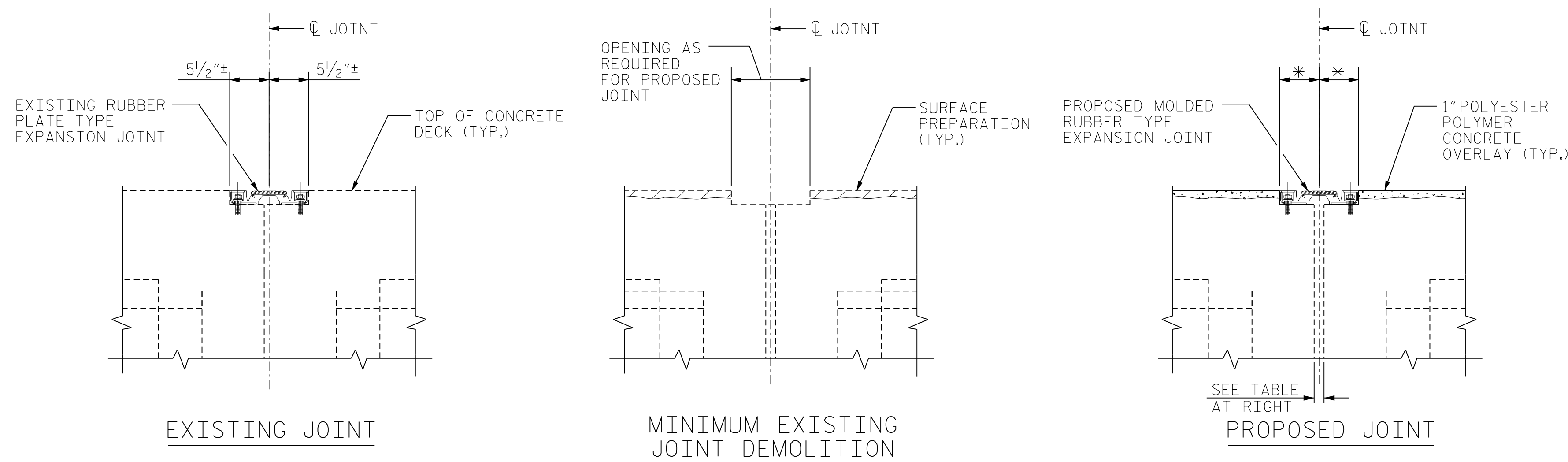


SILICONE JOINT PLAN  
APPLICABLE AT END BENT 1, BENT 1, AND END BENT 2



\*\*\* NON-SAG SILICONE JOINT SEALANT TO BE PLACED AND ALLOWED TO SET, PRIOR TO PLACEMENT OF SELF-LEVELING SILICONE JOINT SEALANT.

### JOINT INSTALLATION SEQUENCE AT BENT 1



MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
2	98°	7/8"	1 5/8"	1 1/2"	1 1/4"
3	98°	1 1/16"	1 1/16"	1 1/2"	1 3/16"

\* DIMENSIONS TO BE ESTABLISHED PER JOINT MANUFACTURER'S RECOMMENDATIONS



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WAKE COUNTY  
BRIDGE NO. 316

SHEET 5 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
JOINT DETAILS					
REVISIONS					SHEET NO.
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2			4		
TOTAL SHEETS					25

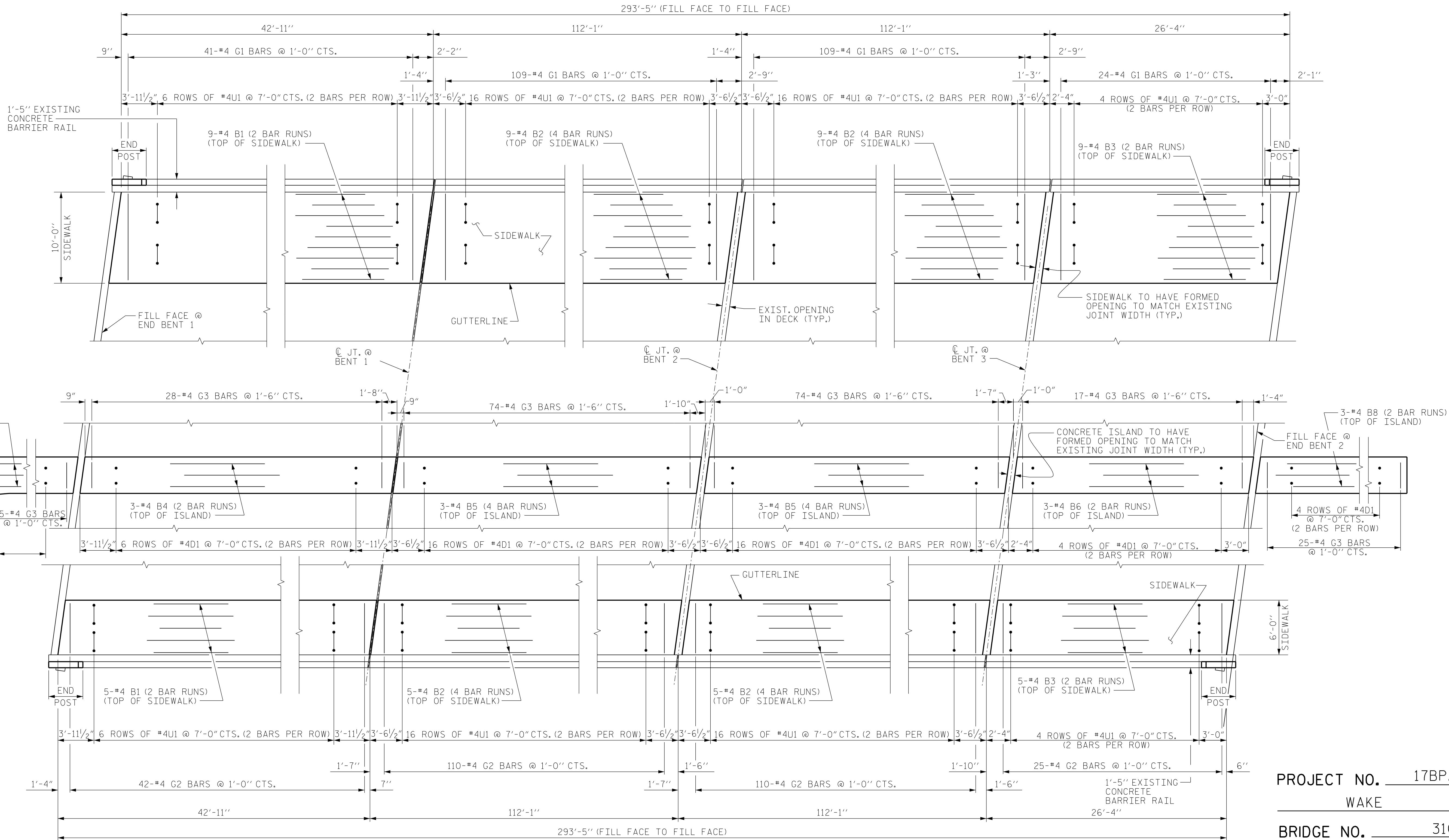
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### JOINT INSTALLATION SEQUENCE AT BENTS 2 & 3

SECTION C-C

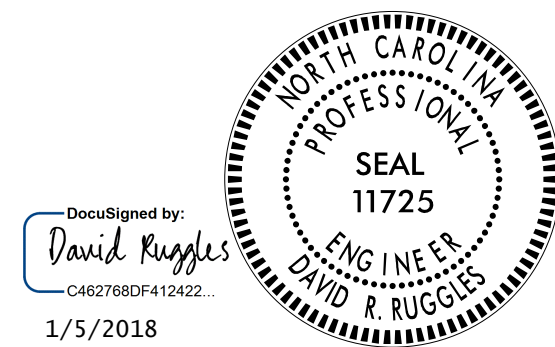
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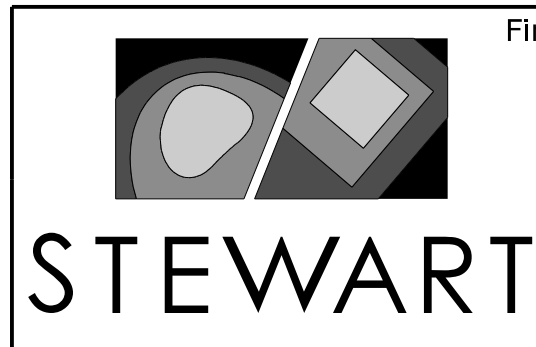


### PLAN OF SIDEWALKS & CONCRETE ISLAND

ALL DIMENSIONS ARE TAKEN ALONG THE GUTTERLINE OF THE EXISTING BARRIER RAIL.



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WAKE COUNTY  
BRIDGE NO. 316

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE SIDEWALK AND CONCRETE ISLAND PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		
SHEET NO. S-9					TOTAL SHEETS 25



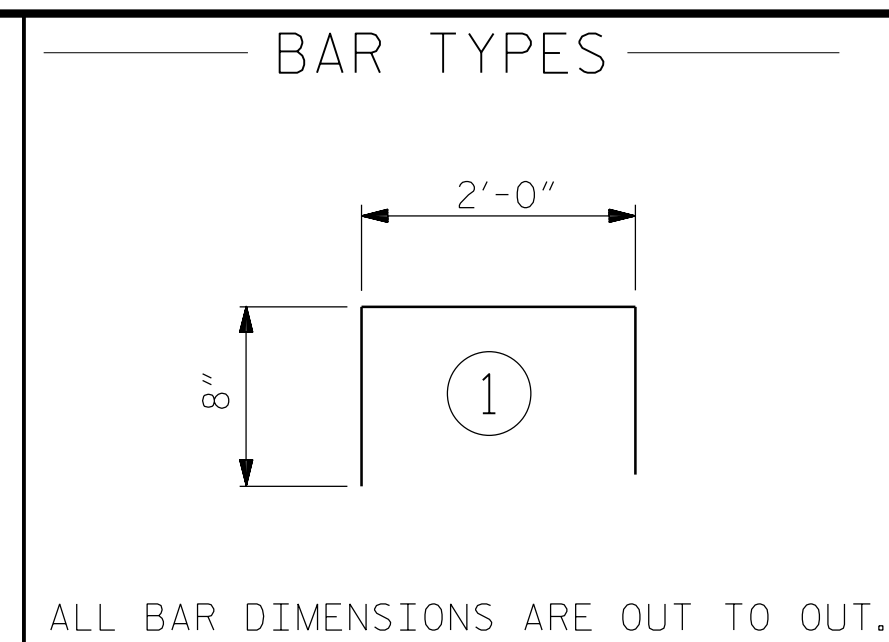


SECTION THRU 6'-0" SIDEWALK

NOTES:

SECTION THRU MONOLITHIC  
CONCRETE ISLAND

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BILL OF MATERIAL					
10'-0" CONCRETE SIDEWALK					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
B1	18	#4	STR	22'-2"	267
B2	72	#4	STR	29'-3"	1407
B3	18	#4	STR	13'-11"	167
U1	84	#4	1	3'-4"	187
G1	283	#4	STR	9'-6"	1796
EPOXY COATED REINFORCING STEEL					3,824 LBS.
CLASS AA CONCRETE					80.8 CU.YDS.
6'-0" CONCRETE SIDEWALK					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#4	STR	22'-2"	148
B2	40	#4	STR	29'-3"	782
B3	10	#4	STR	13'-11"	93
U1	84	#4	1	3'-4"	187
G2	287	#4	STR	5'-6"	1054
EPOXY COATED REINFORCING STEEL					2,264 LBS.
CLASS AA CONCRETE					45.6 CU.YDS.
4'-0" CONCRETE ISLAND					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
B4	6	#4	STR	22'-2"	89
B5	24	#4	STR	29'-3"	469
B6	6	#4	STR	13'-11"	56
B8	12	#4	STR	13'-7"	109
D1	100	#4	STR	0'-7"	39
G3	243	#4	STR	2'-8"	433
EPOXY COATED REINFORCING STEEL					1,195 LBS.
CLASS AA CONCRETE					16.4 CU.YDS.

SPLICE LENGTH FOR  
#4 "B" BARS = 1'-9"

PROJECT NO. 17BP.5.H.4

WAKE COUNTY

BRIDGE NO. 316

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
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RALEIGH

## SUPERSTRUCTURE

# SIDEWALK AND CONCRETE ISLAND DETAILS

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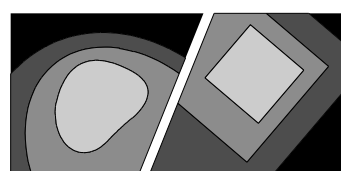
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*David Ruggles*  
C46278BDF412422...  
1/5/2018



A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "DAVID R. RUGGLES" at the bottom. Inside this ring, the words "PROFESSIONAL" and "ENGINEER" are arranged in an arc. In the center of the seal, the word "SEAL" is positioned above the number "11725".

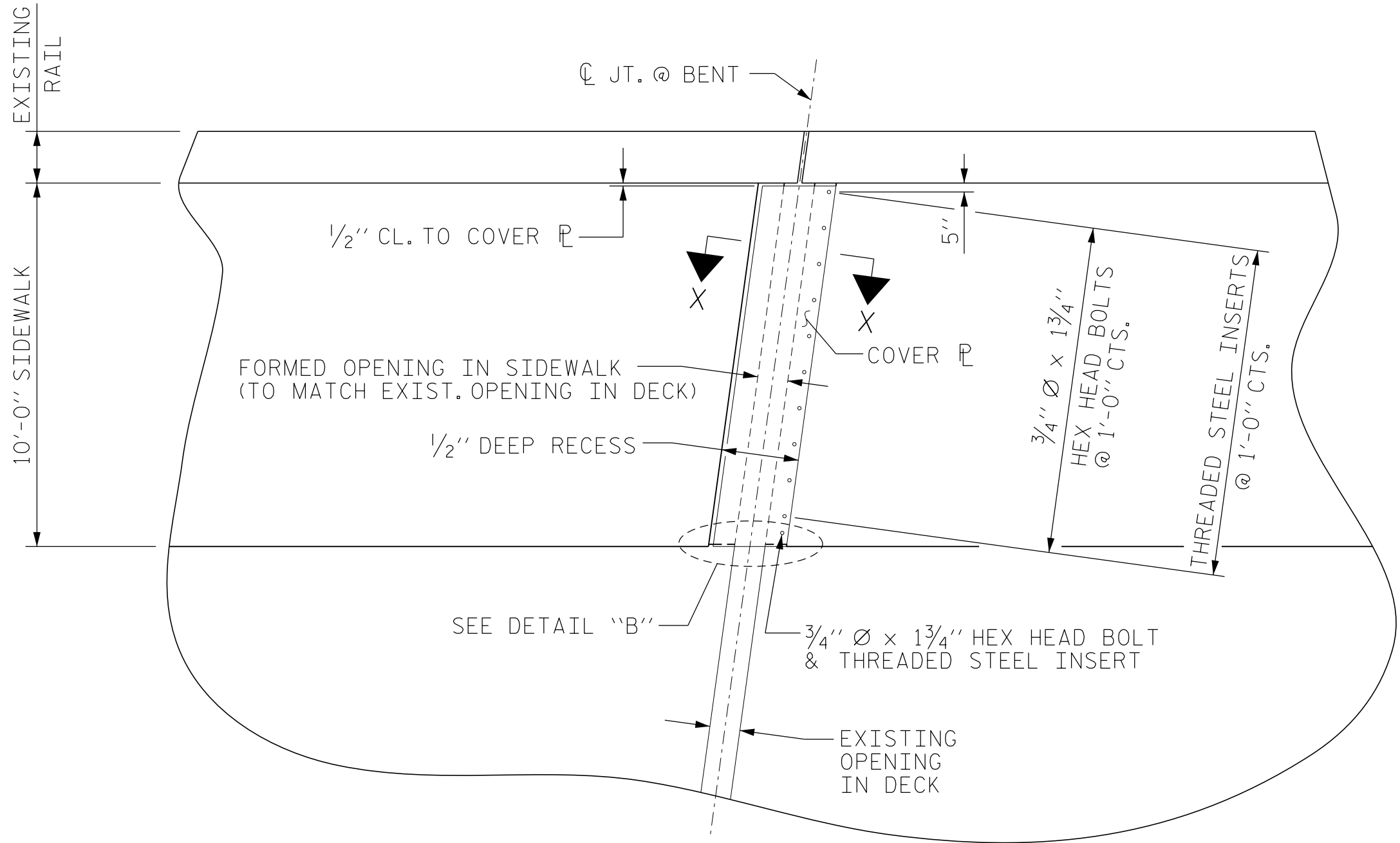
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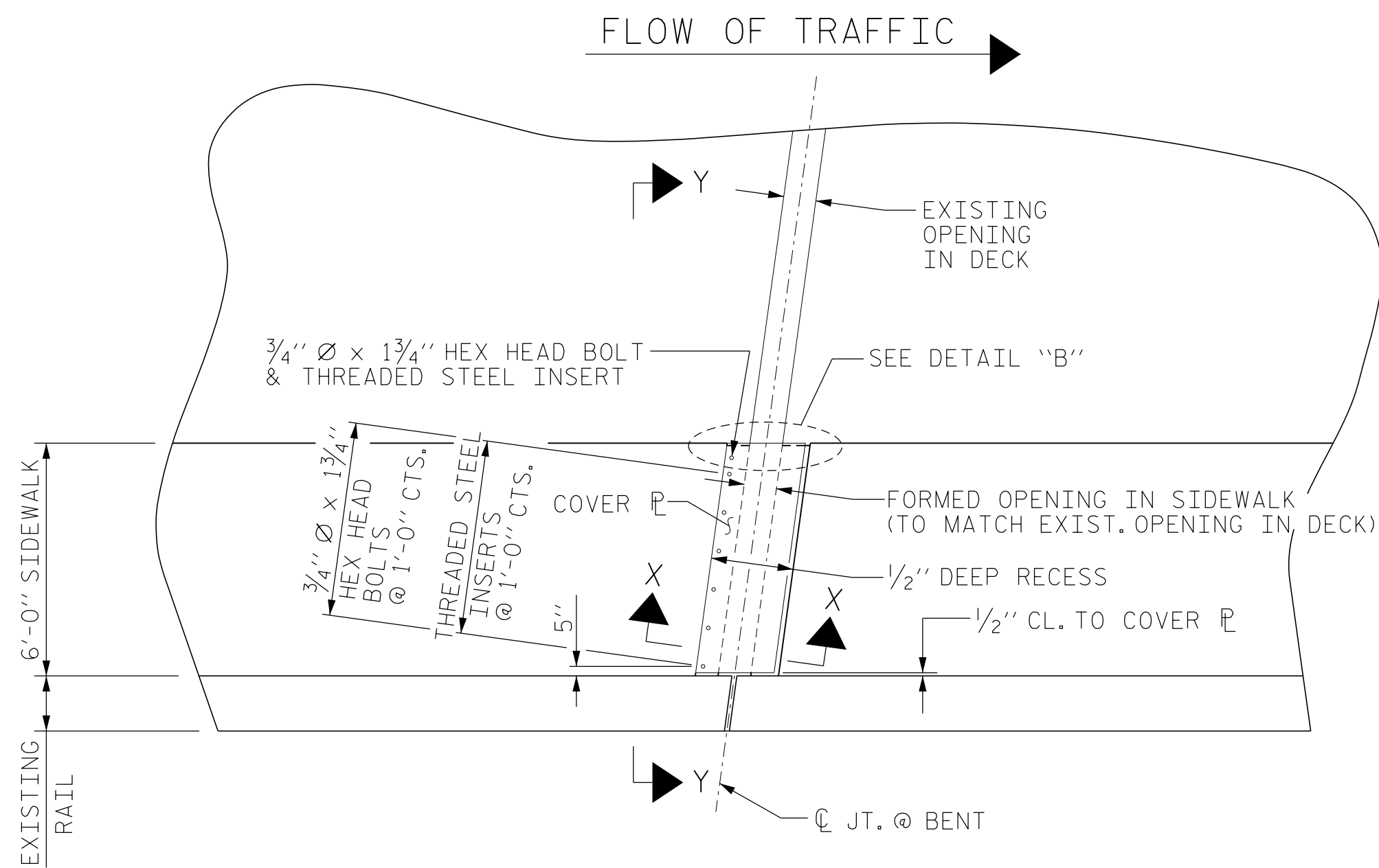
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PLAN OF 10'-0" SIDEWALK COVER PLATE @ BENTS

TYPICAL AT ALL BENTS



PLAN OF 6'-0" SIDEWALK COVER PLATE @ BENTS

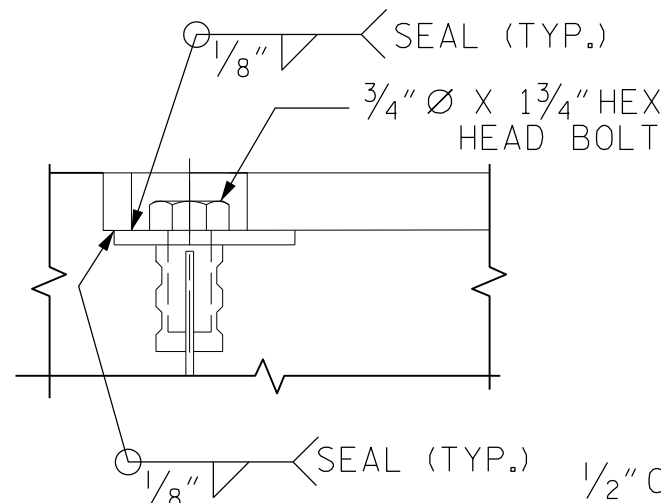
TYPICAL AT ALL BENTS

COVER PLATE NOTES:

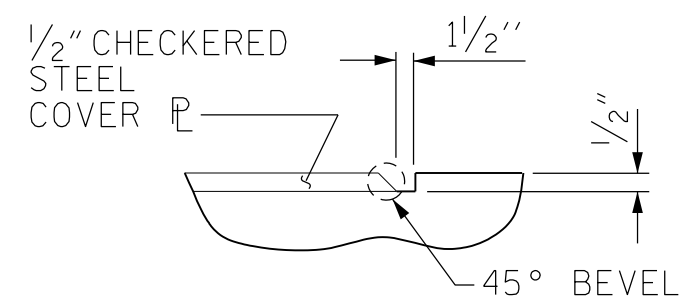
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

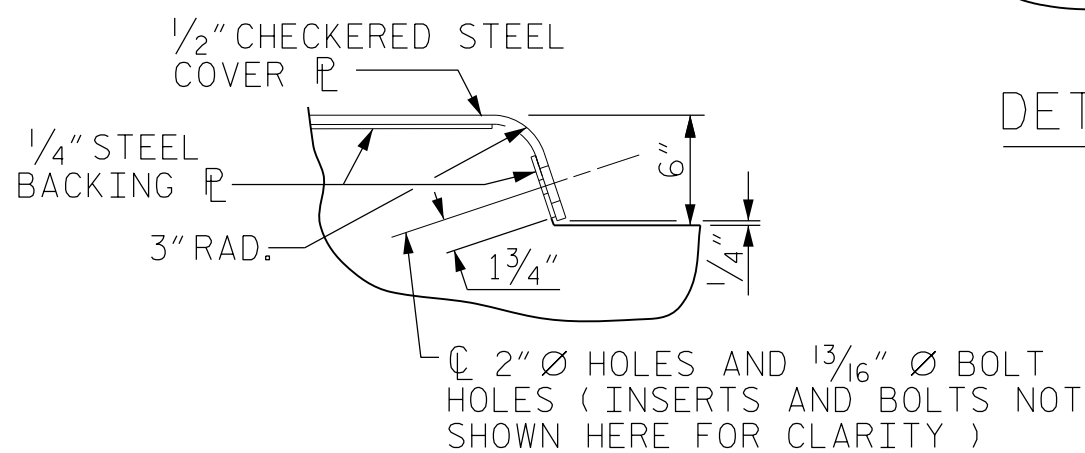
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE PAY ITEMS FOR MOLDED RUBBER SEGMENTAL EXPANSION JOINT AND JOINT REPAIR.



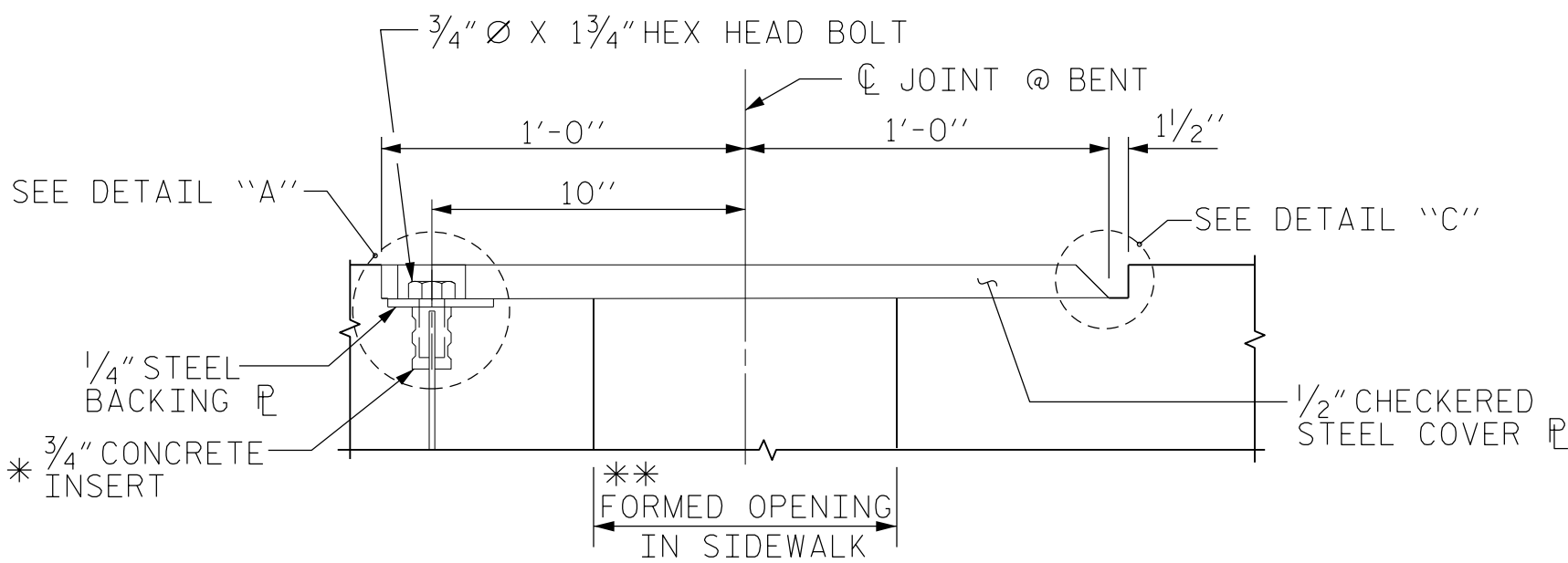
DETAIL "A"



DETAIL "C"



DETAIL "B"

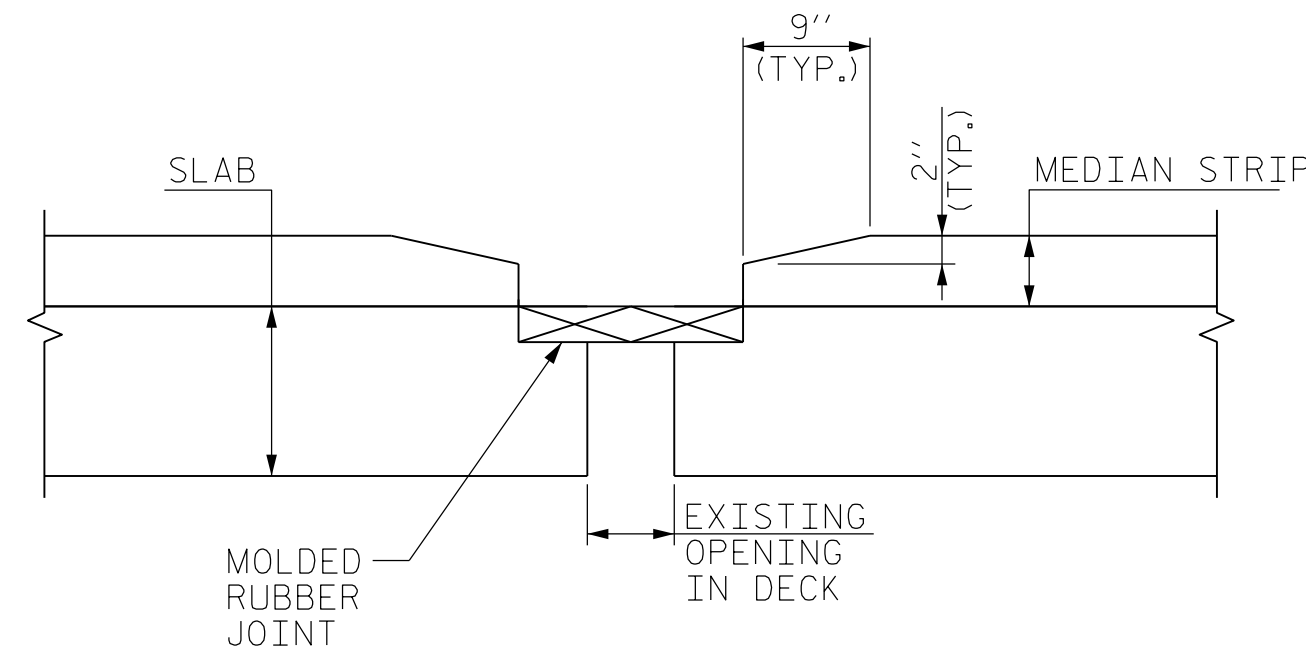


SECTION X-X

\*THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

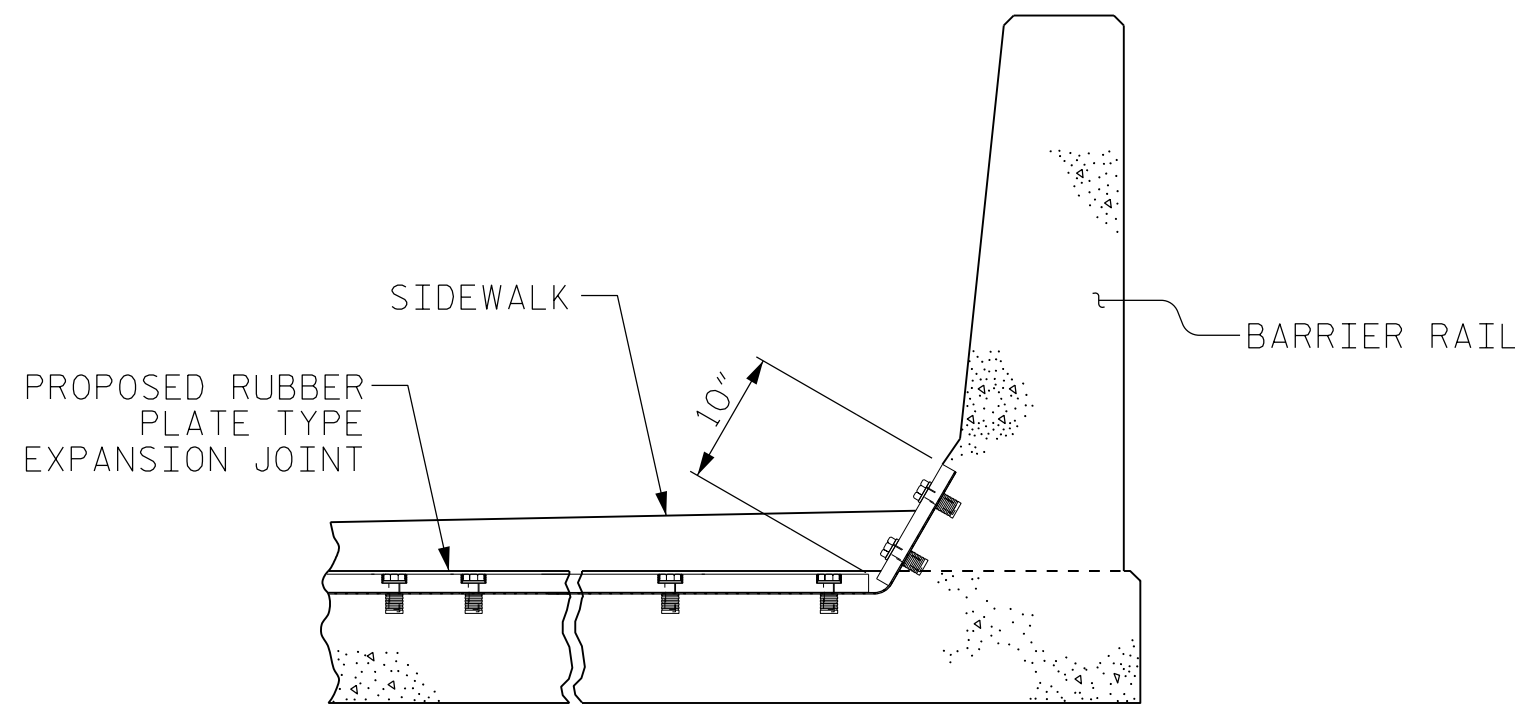
\*\*FORMED OPENING TO MATCH WIDTH OF MOLDED RUBBER EXPANSION JOINT.

SIDEWALK COVER PLATE DETAILS



CONCRETE ISLAND DETAIL AT EXPANSION JOINTS

TYPICAL AT ALL BENTS



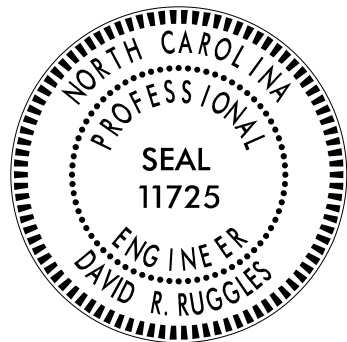
SECTION Y-Y

PROJECT NO. 17BP.5.H.4

WAKE COUNTY

BRIDGE NO. 316

SHEET 3 OF 3



Drawn by:  
David Ruggles  
C462788DF412422...  
3/8/2018

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SUPERSTRUCTURE

SIDEWALK DETAILS

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: E. PHELPS DATE : 06-17  
CHECKED BY: D. RUGGLES DATE : 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 09-17

BENT REPAIR STAGING SEQUENCE

STAGING SEQUENCE BELOW IS FOR BENT 1. BENT 3 STAGING SEQUENCE IS SIMILAR. PEDESTAL REFERS TO RAISED PORTION OF BRIDGE SEAT ON SPAN A OR SPAN D SIDE OF BENT.

- STEP 1:
- REMOVE PORTIONS OF PEDESTALS BETWEEN GIRDERS AS SHOWN. A FOUR FT WIDE PORTION OF PEDESTAL BENEATH EACH SPAN A GIRDER SHALL REMAIN.
  - PEDESTAL SHALL BE REMOVED TO ELEVATION THAT MATCHES ADJACENT SPAN B SEAT.

- STEP 2:
- INSTALL JACKING SADDLES AS SHOWN BENEATH GIRDERS 2 THRU 12.

- STEP 3:
- REMOVE NUTS FROM SPAN A BEARING ANCHOR BOLTS FOR GIRDERS 1 THRU 13.
  - INSTALL SHIMS BETWEEN JACKING SADDLES AND SPAN B BOTTOM OF GIRDERS FOR GIRDERS 2 THRU 12 AND LOW PROFILE JACKS BENEATH GIRDERS 1 AND 13.
  - INSTALL JACKS (AND SHIMS AS REQUIRED) BETWEEN JACKING SADDLES AND SPAN A BOTTOM OF GIRDERS FOR GIRDERS 1 THRU 13.
  - SURVEYOR TO MEASURE BOTTOM OF GIRDER ELEVATIONS FOR SPAN A GIRDERS 1 THRU 13 AT BEARINGS.
  - JACK SPAN A GIRDERS 1 THRU 13 UPWARD AT AN EQUAL RATE AS DESCRIBED ON SHEET S-24 FOR A MAXIMUM DISTANCE OF 1/4 INCH.
  - SURVEYOR TO RE-MEASURE BOTTOM OF GIRDER ELEVATIONS FOR SPAN A GIRDERS 1 THRU 13 IN JACKED POSITION AT BEARINGS.

- STEP 4:
- SEVER EXISTING ANCHOR BOLTS FOR GIRDERS 1 THRU 13. REMOVE BEARINGS FOR GIRDERS 1 THRU 13.
  - REMOVE PEDESTALS FOR GIRDERS 2 THRU 12 TO ELEVATION THAT MATCHES ADJACENT SPAN B SEAT.

- STEP 5:
- LOCATE MAIN CAP REINFORCEMENT IN CAP (SEE NOTES).
  - PLACE MARK ON CAP AT HOLE LOCATIONS FOR GIRDERS 1 AND 13.DRILL 2½”Ø HOLES IN CAP AT GIRDERS 1 AND 13.HOLES SHALL BE DRILLED 1’-3”DEEP TO MATCH ANCHOR BOLT EMBEDMENT.INSTALL ANCHOR BOLTS USING ADHESIVE ANCHORS AFTER BEARING PLATE P2 AND ELASTOMERIC PAD HAVE BEEN PLACED.
  - DRILL HOLES IN CAP FOR #6 ”B”BARS IN AREAS AWAY FROM MAIN CAP REINFORCEMENT. INSTALL #6 ”B”BARS USING ADHESIVE ANCHORS.TEST ANCHORS USING LEVEL I FIELD TESTING AS DESCRIBED IN SPECIFICATIONS. INSTALL REMAINING SEAT REINFORCEMENT.
  - PLACE FORMING FOR NEW BRIDGE PEDESTALS. TOP OF FORM ELEVATION TO BE ESTABLISHED BY MEASURING GAP BETWEEN BOTTOM OF SPAN A GIRDERS AND TOP OF FORM. GAP SHALL BE TOTAL BEARING DEPTH PLUS JACKING DEPTH (JACKING DEPTH IS DIFFERENCE BETWEEN BOTTOM OF JACKED GIRDER ELEVATION AND BOTTOM OF UNJACKED GIRDER ELEVATION).
  - POUR CONCRETE FOR NEW PEDESTALS.

- STEP 6:
- AFTER CONCRETE HAS SET,REMOVE FORMS AND INSTALL NEW BEARINGS FOR SPAN A GIRDERS 2 THRU 12.
  - AFTER CONCRETE HAS REACHED FULL STRENGTH,UNJACK GIRDERS TO REST ON NEW BEARINGS (AND ON EXISTING BEARINGS FOR GIRDERS 1 AND 13). REMOVE JACKS AND SADDLES.
  - PORTIONS OF SPAN A BRIDGE SEAT BETWEEN SADDLES TO BE GROUND TO A SMOOTH SURFACE.
  - INSTALL GROUT IN BEARING GROUT CANS. AFTER GROUT HAS SET,TIGHTEN NUTS ON ANCHOR BOLTS FOR GIRDERS 1 THRU 13.
  - INSTALL EPOXY PROTECTIVE COATING ON CAP.
  - PAINT ENDS OF BEAMS AS DESCRIBED IN PLAN NOTES AND SPECIFICATIONS.

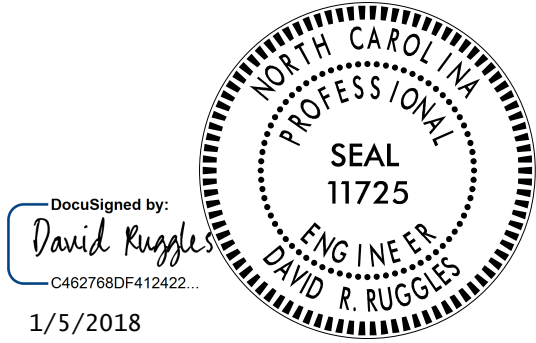
BAR TYPES						BILL OF MATERIAL						BILL OF MATERIAL					
						BENT #1 REPAIRS						BENT #3 REPAIRS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B11	66	#6	STR	3’-3”	322	B11	66	#6	STR	3’-3”	322	B11	66	#6	STR	3’-3”	322
B12	44	#6	2	4’-3”	281	B12	44	#6	2	4’-3”	281	B12	44	#6	2	4’-3”	281
S1	44	#4	1	7’-8”	225	S1	44	#4	1	7’-8”	225	S1	44	#4	1	7’-8”	225
REINFORCING STEEL (FOR BENT No. 1)						REINFORCING STEEL (FOR BENT No. 3)						REINFORCING STEEL (FOR BENT No. 3)					
						828 LBS.						828 LBS.					
CLASS A CONCRETE BREAKDOWN (FOR BENT NO.1)						CLASS A CONCRETE BREAKDOWN (FOR BENT NO.3)						CLASS A CONCRETE BREAKDOWN (FOR BENT NO.3)					
POUR #1 PEDESTALS						2.9 C.Y.						POUR #1 PEDESTALS					
TOTAL CLASS A CONCRETE						2.9 C.Y.						TOTAL CLASS A CONCRETE					
1¾” Ø x 1’-8½” ANCHOR BOLTS						NO: 22						1¾” Ø x 1’-8½” ANCHOR BOLTS					
PIPE SYSTEM FOR ANCHOR BOLTS						NO: 22						PIPE SYSTEM FOR ANCHOR BOLTS					

ALL BAR DIMENSIONS ARE OUT TO OUT.

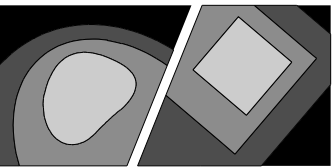
NOTES

CONTRACTOR TO UTILIZE X-RAY IMAGERY OR PACHOMETER TO LOCATE EXISTING CAP REINFORCEMENT BEFORE DRILLING HOLES FOR NEW PEDESTAL DOWELS. CONTRACTOR MAY UTILIZE LIGHTWEIGHT PNEUMATIC HAMMER (17 LB. MAXIMUM) WITH POINTS THAT DO NOT EXCEED WIDTH OF SHANK (OR HAND PICKS AND CHISELS) TO DEMO CAP CONCRETE AS NECESSARY TO LOCATE EXISTING CAP REINFORCEMENT. ALTERNATIVELY, HYDRO-DEMOLITION METHODS MAY BE UTILIZED TO DEMO CAP CONCRETE AS NECESSARY. THE METHOD UTILIZED SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL AND SHALL NOT DAMAGE CAP REINFORCEMENT OR DAMAGE CAP CONCRETE ANY MORE THAN NECESSARY TO LOCATE EXISTING REINFORCEMENT.

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316



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SUBSTRUCTURE  
BENTS 1 & 3  
STAGING & BOM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	
2			4			25	

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CHECKED BY:	D. RUGGLES	DATE :	09-17
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE :	09-17



WAKE 316

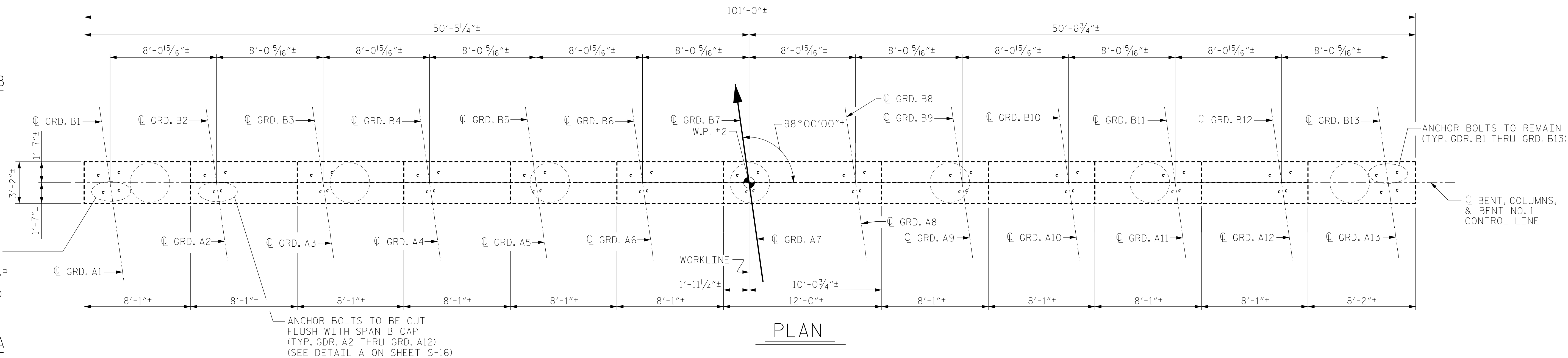
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\$\$\$\$DGN\$\$\$\$  
\$\$\$\$USERNAME\$\$\$\$

DRAWN BY: E. PHELPS DATE: 06-17  
CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

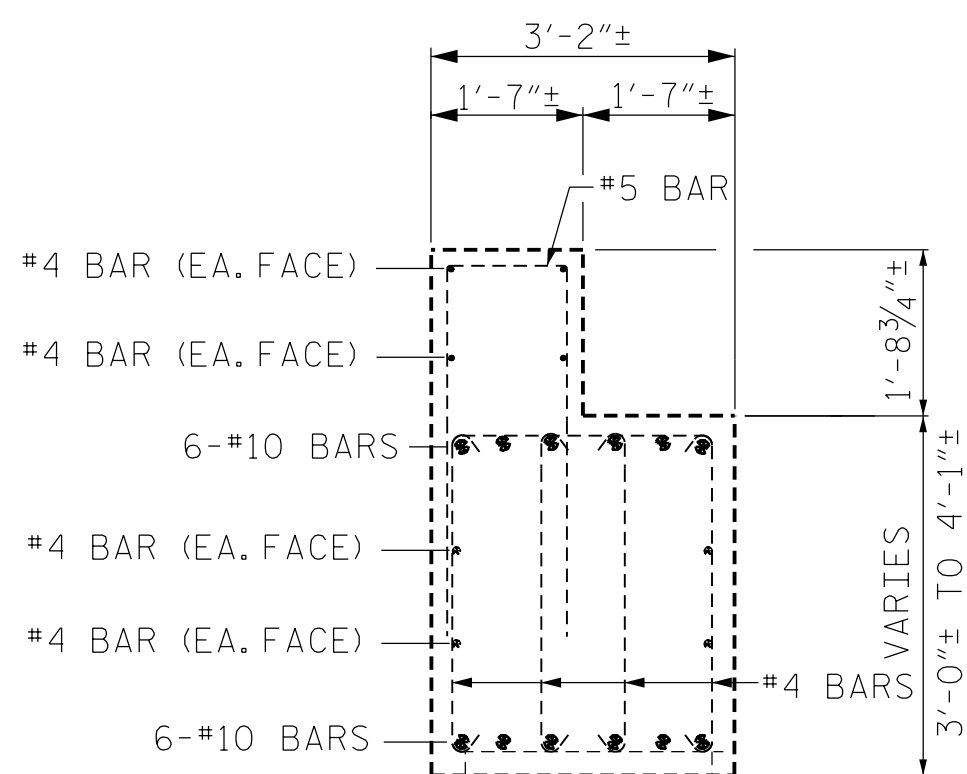
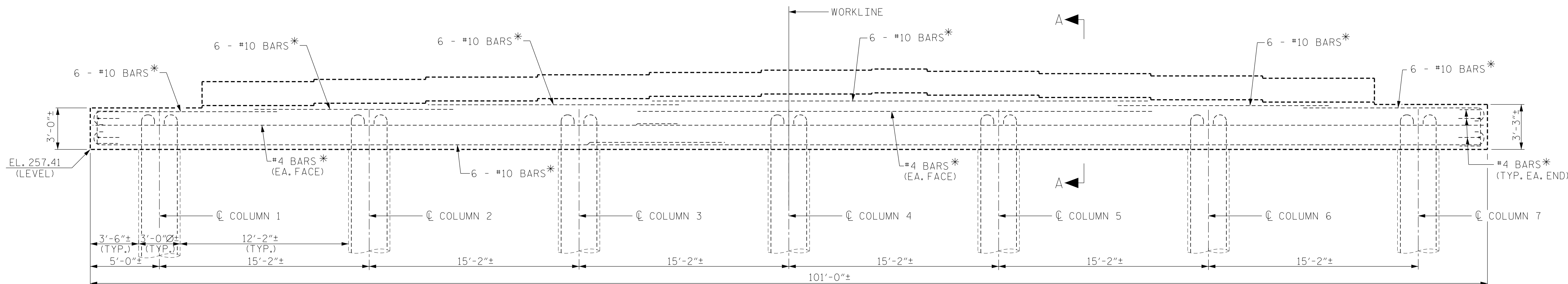
SPAN B

ANCHOR BOLTS  
TO BE CUT  
FLUSH WITH CAP  
(SEE DETAIL C  
ON SHEET S-17)  
(TYP. GRD. A1 &  
GDR. A13)

SPAN A



## ELEVATION



## SECTION A-A

(COLUMN AND COLUMN STEEL NOT SHOWN FOR CLARITY)  
(PEDESTAL REINFORCEMENT MAY NOT EXIST)

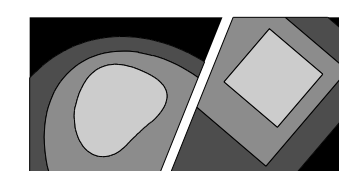
## EXISTING CONDITIONS - BENT 1

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 1 OF 5



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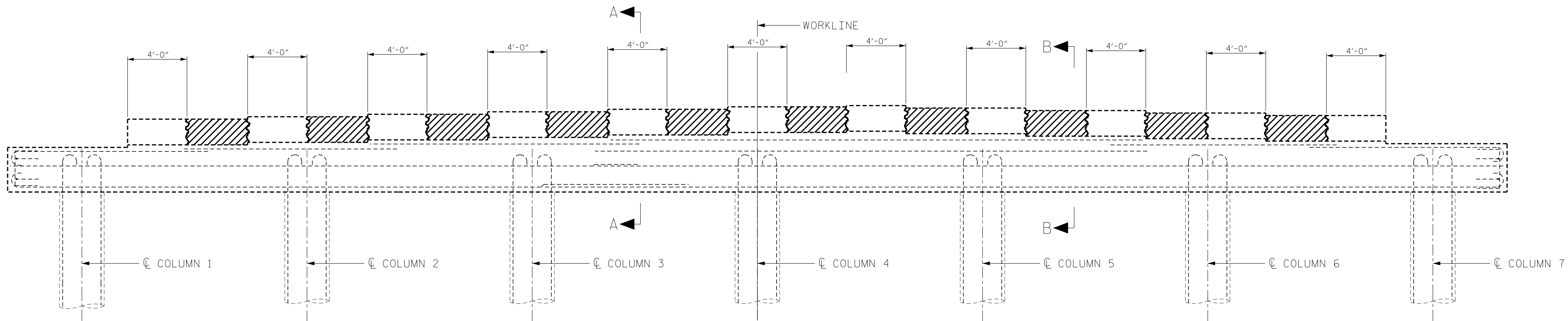
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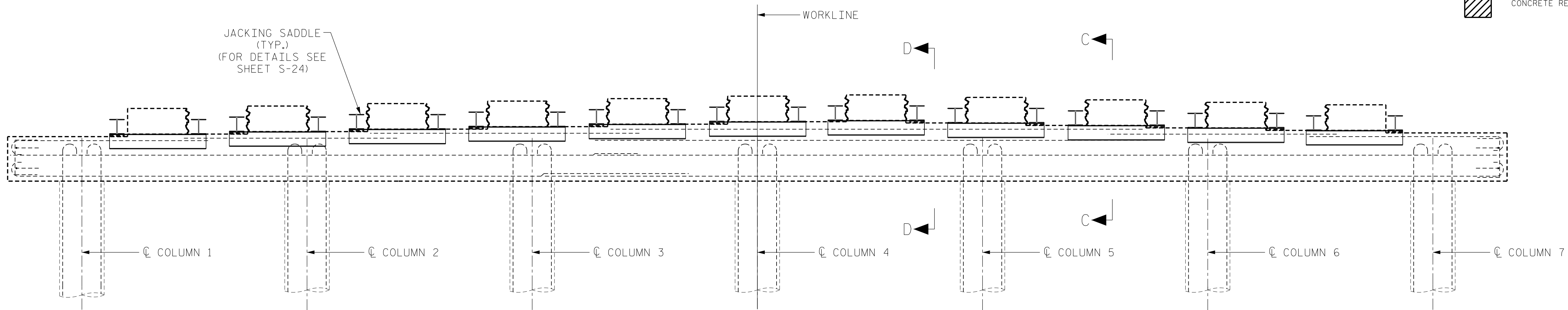
SUBSTRUCTURE  
BENT 1  
EXISTING CONDITIONS

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			



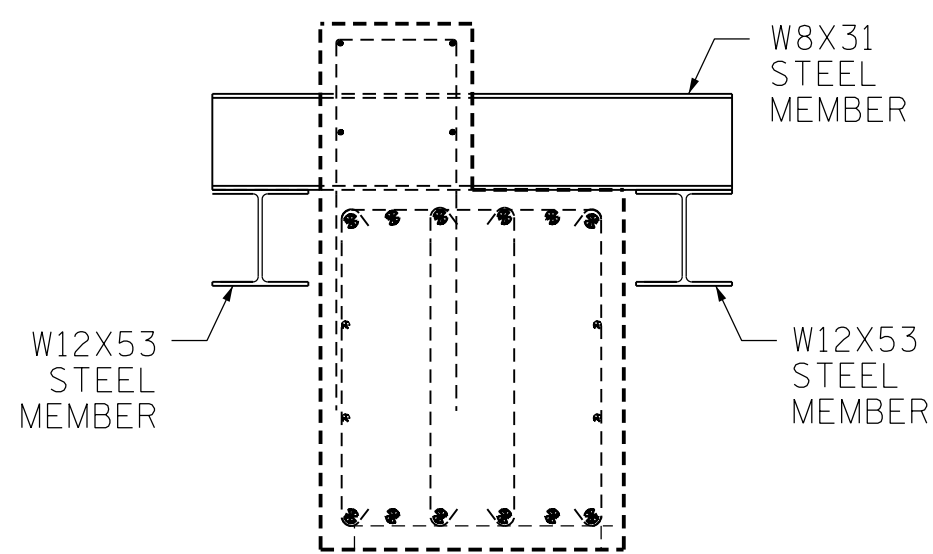
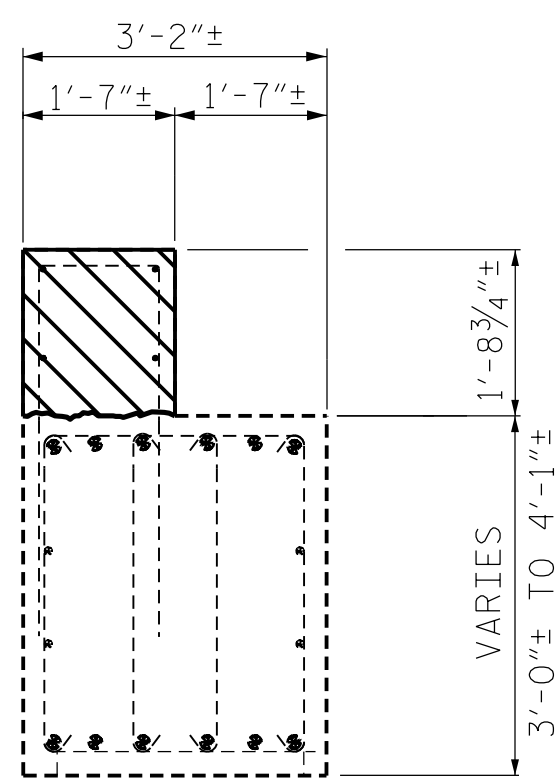
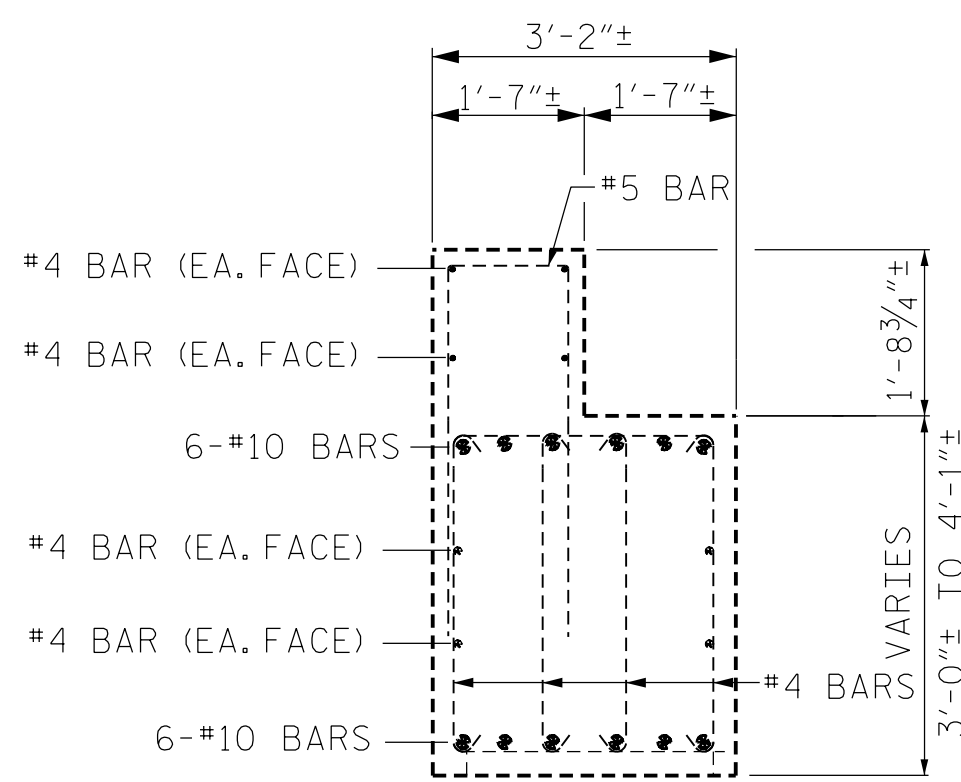


STEP 1



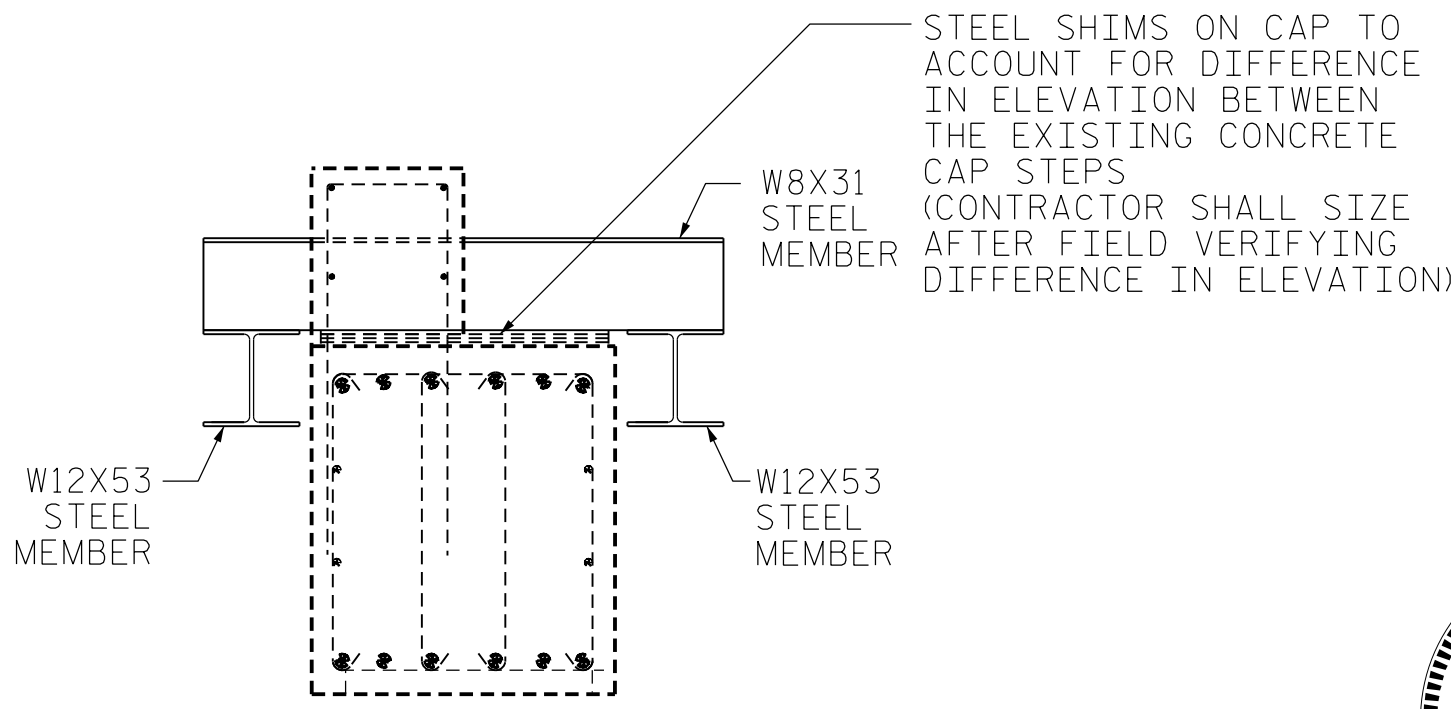
STEP 2

LEGEND



SECTION C-C

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24



SECTION D-D

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24

STEEL SHIMS ON CAP TO  
ACCOUNT FOR DIFFERENCE  
IN ELEVATION BETWEEN  
THE EXISTING CONCRETE  
CAP STEPS  
(CONTRACTOR SHALL SIZE  
AFTER FIELD VERIFYING  
DIFFERENCE IN ELEVATION)

DocuSigned by:  
David Ruggles  
C462768DF412422  
1/5/2018



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WAKE COUNTY

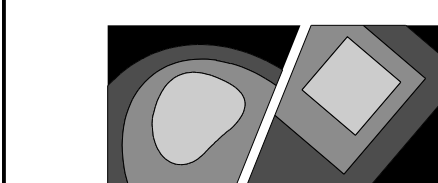
BRIDGE NO. 316

SHEET 2 OF 5

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SUBSTRUCTURE  
BENT 1  
CONSTRUCTION STAGING

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2			4			



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SECTION A-A

(COLUMN AND COLUMN STEEL NOT SHOWN FOR CLARITY)  
(PEDESTAL REINFORCEMENT MAY NOT EXIST)

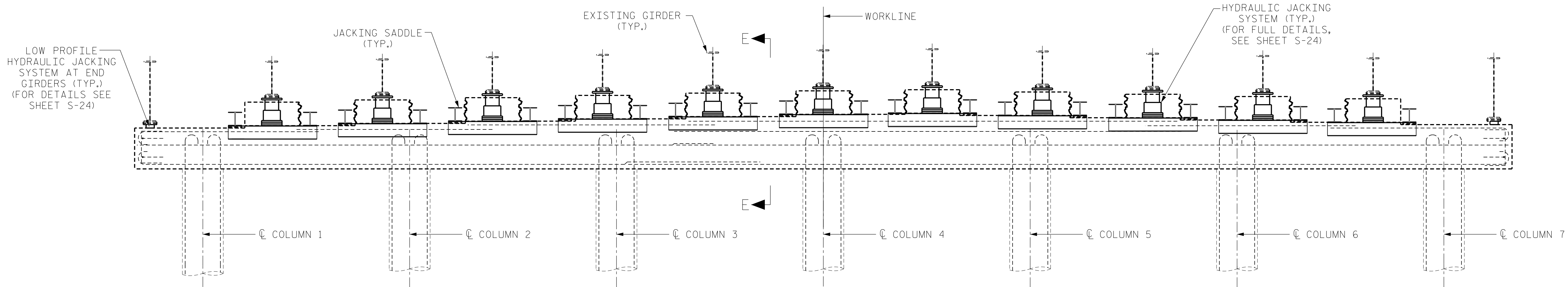
SECTION B-B

(COLUMN AND COLUMN STEEL NOT SHOWN FOR CLARITY)

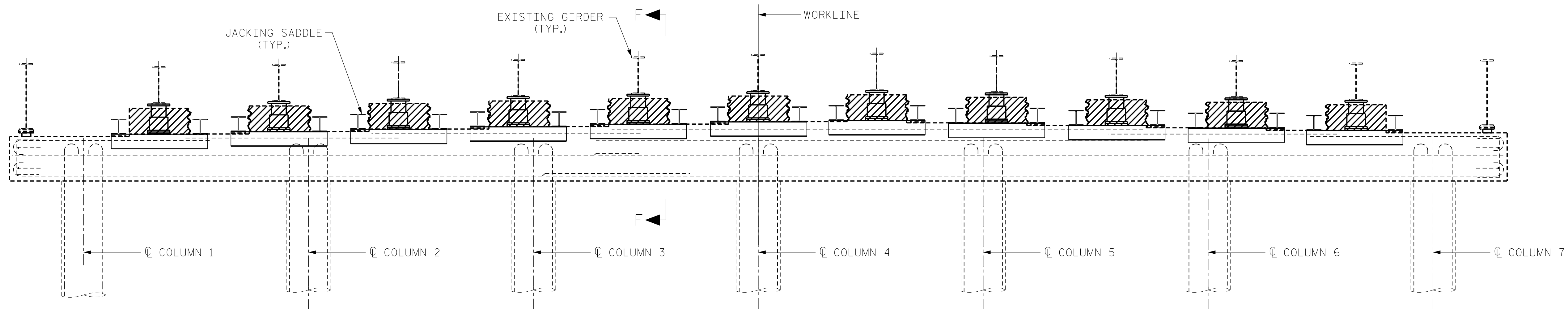
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DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

WAKE 316

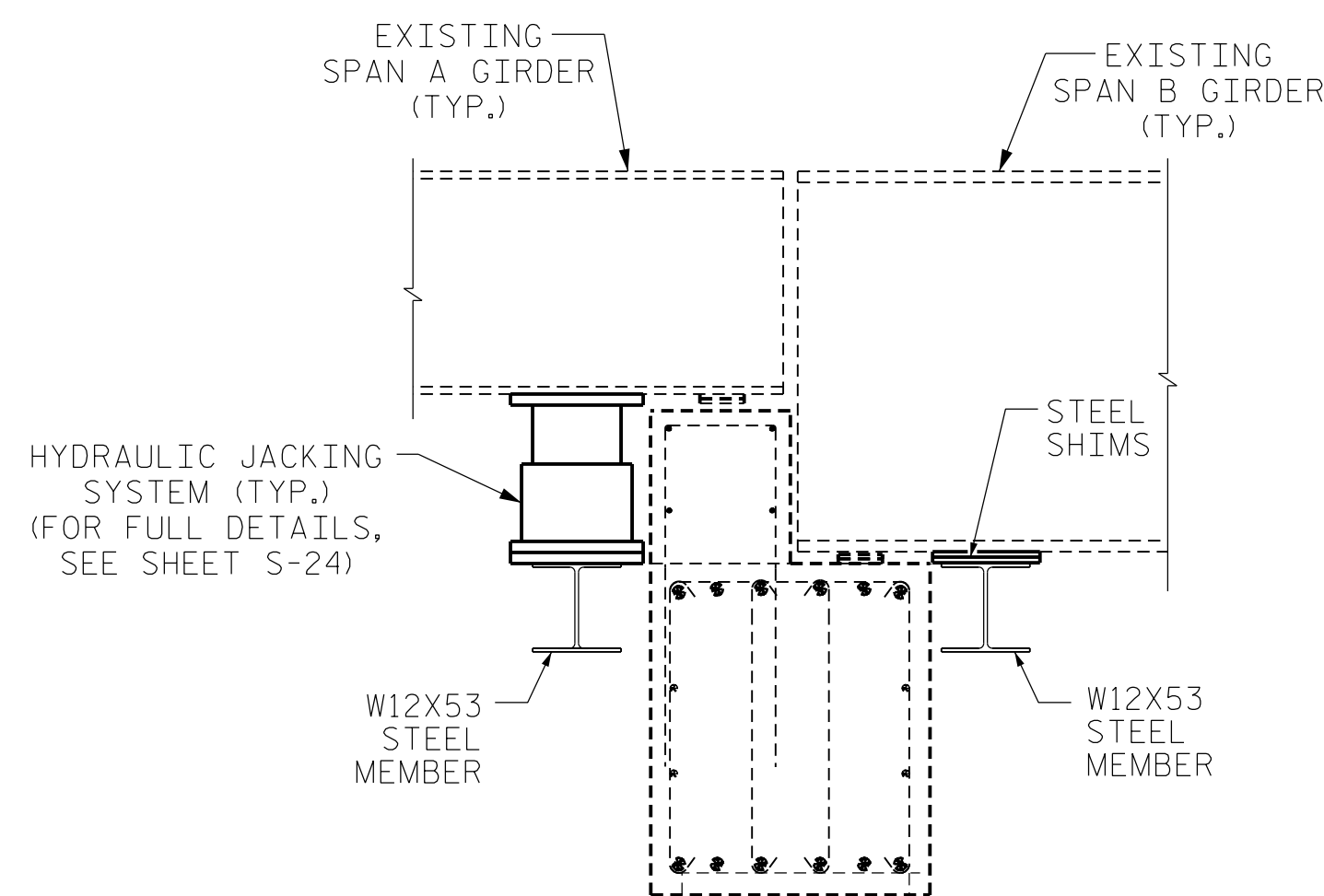
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### STEP 3

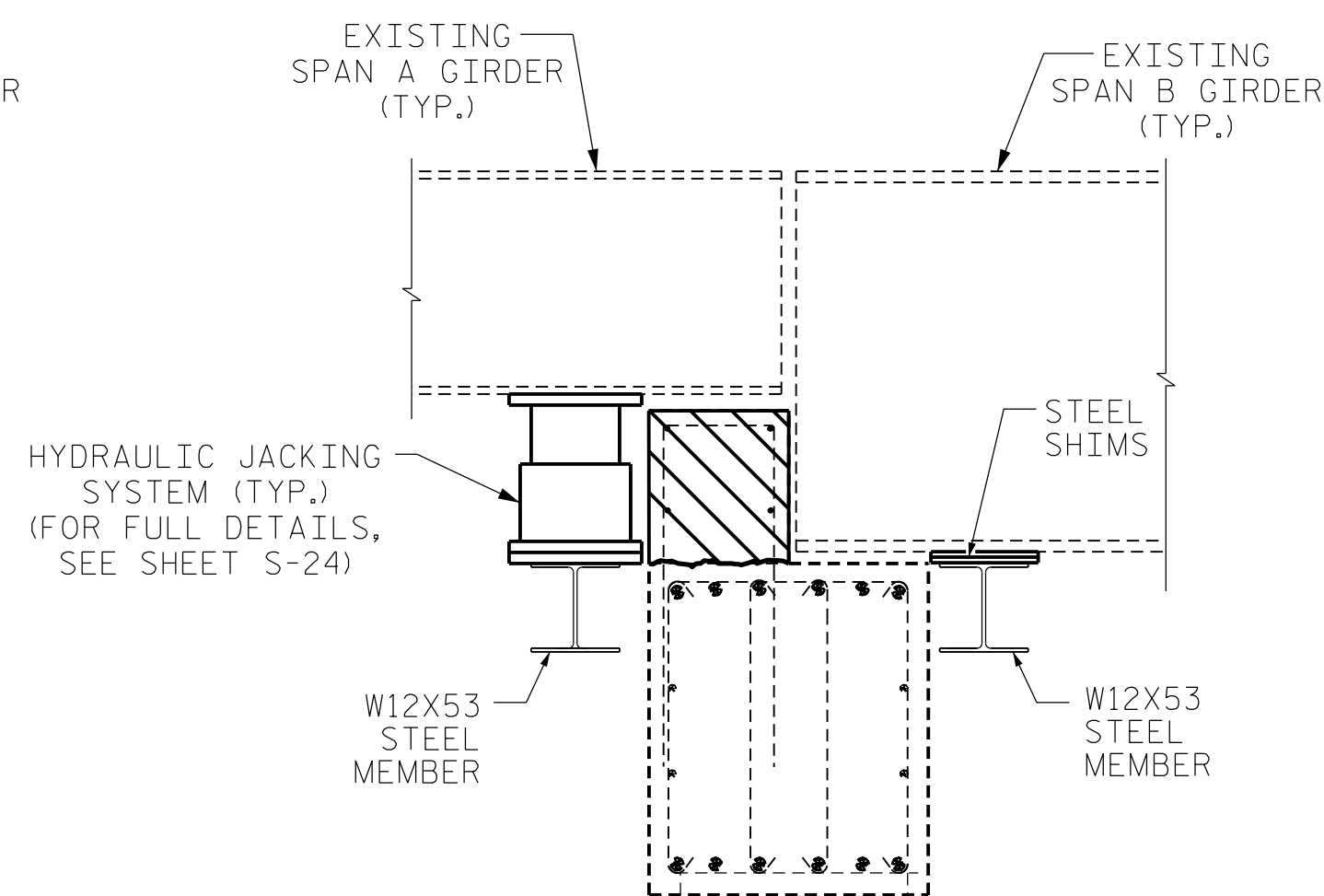


### STEP 4



#### SECTION E-E

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24



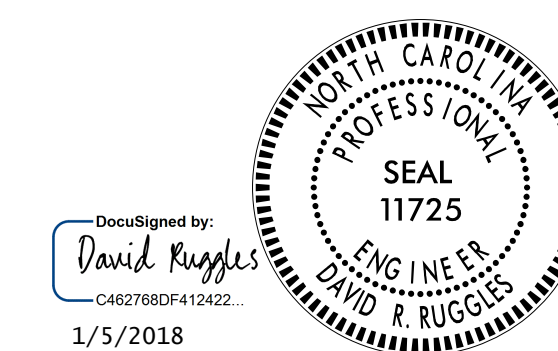
#### SECTION F-F

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24

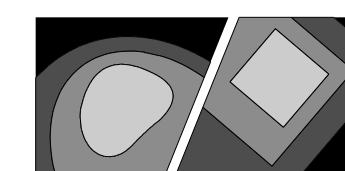
### LEGEND



CONCRETE REMOVAL



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BRIDGE NO. 316

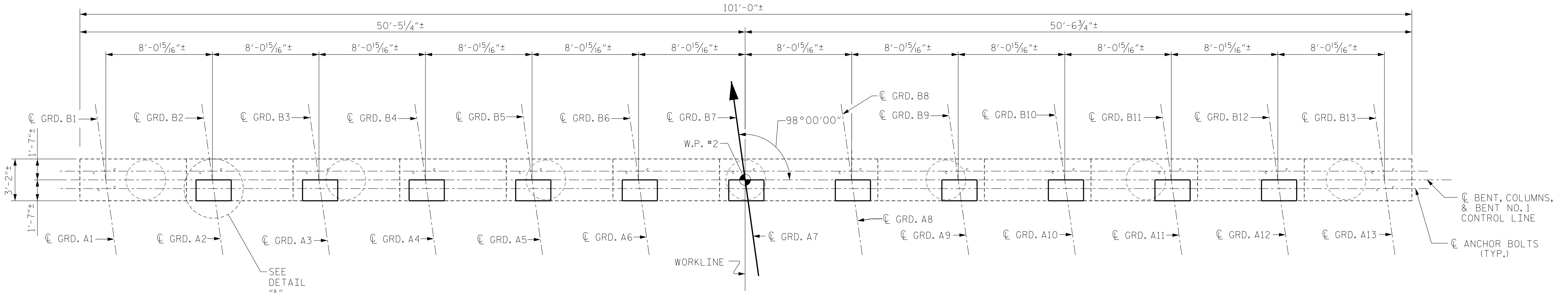
SHEET 3 OF 5

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SUBSTRUCTURE  
BENT 1  
CONSTRUCTION STAGING

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

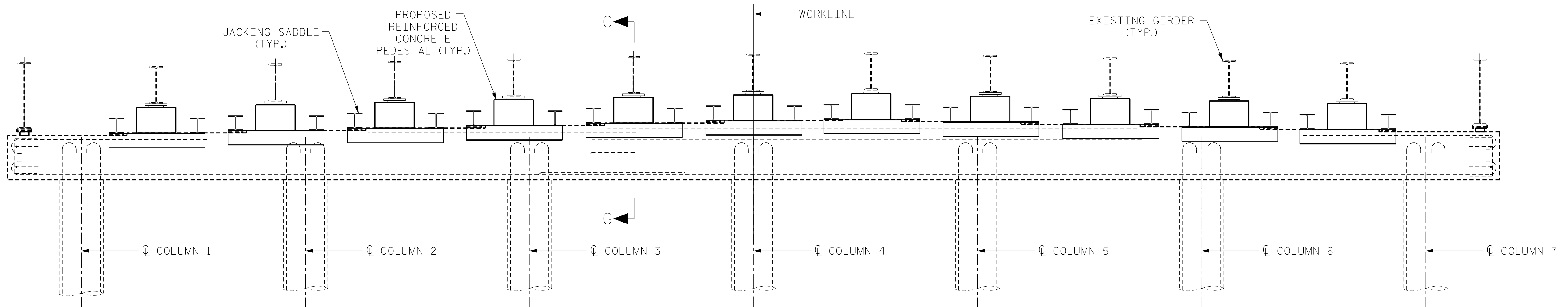
SPAN B



SPAN A

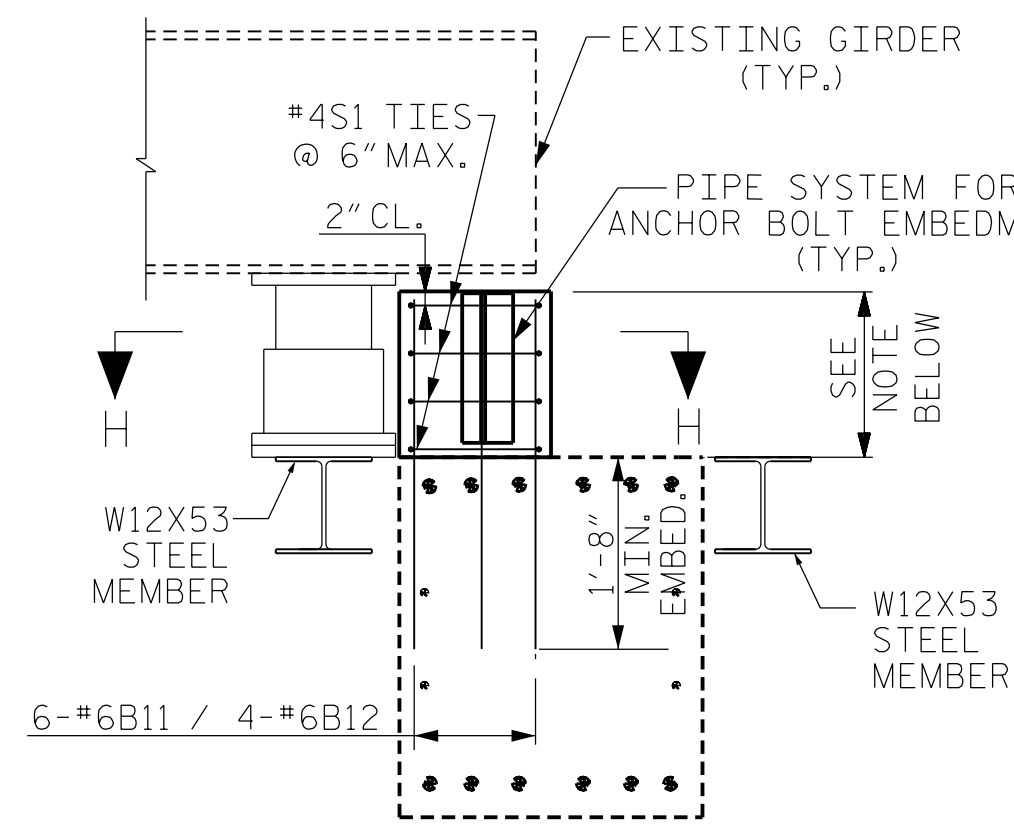
### STEP 5 - PLAN

NOTE: JACKING SADDLE AND HYDRAULIC JACKING SYSTEM NOT SHOWN FOR CLARITY



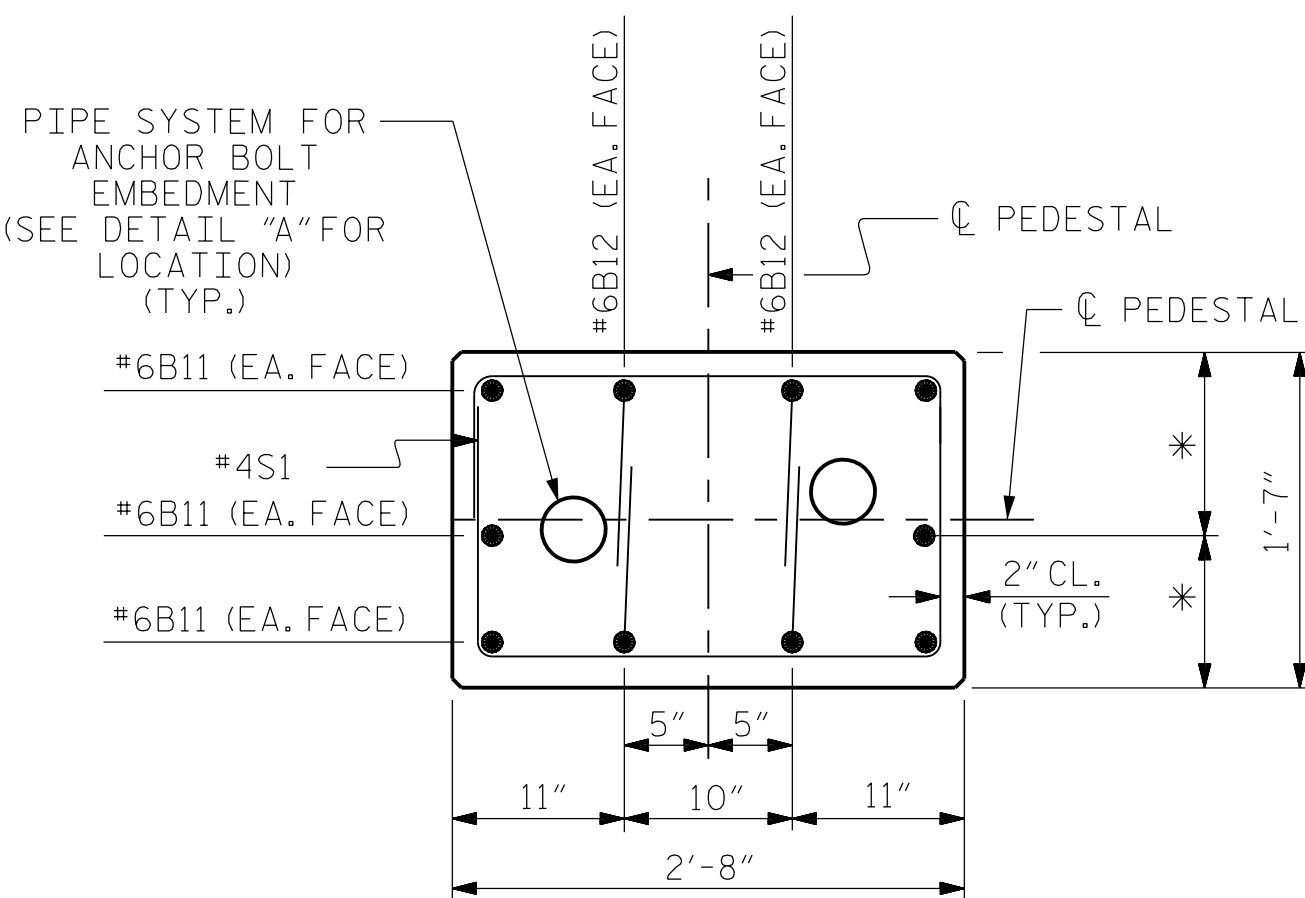
### STEP 5 - ELEVATION

HYDRAULIC JACKING SYSTEM BEHIND PROPOSED PEDESTAL NOT SHOWN FOR CLARITY



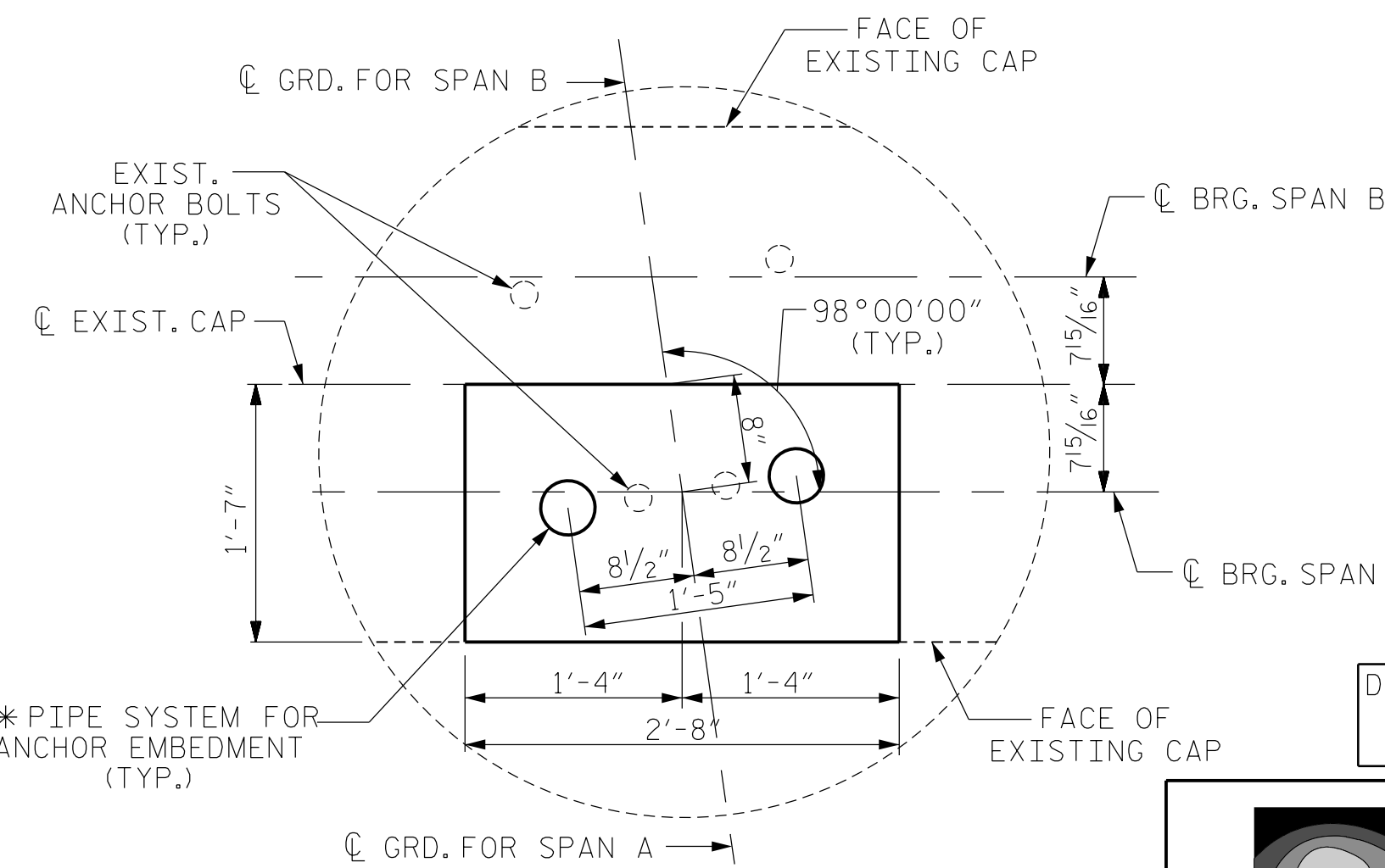
#### SECTION G-G

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
CONTRACTOR TO ESTABLISH HEIGHT. SEE STAGING NOTES.  
APPROXIMATE HEIGHT IS 1'-8 1/4"±



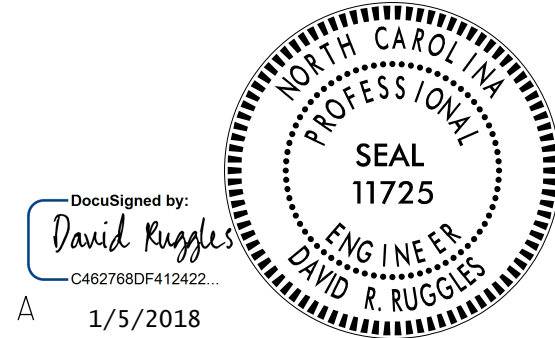
#### SECTION H-H

TYPICAL FOR ALL PEDESTALS  
\* POSITION BARS TO AVOID EXISTING  
LONGITUDINAL REINFORCEMENT IN EXISTING CAP

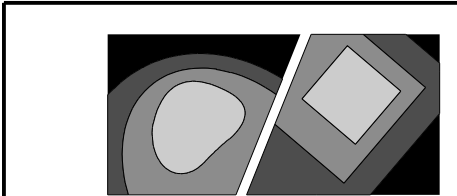


#### DETAIL "A"

TYPICAL FOR ALL PEDESTALS  
\* FOR DETAILS SEE "PIPE SYSTEM DETAIL" ON SHEET S-23



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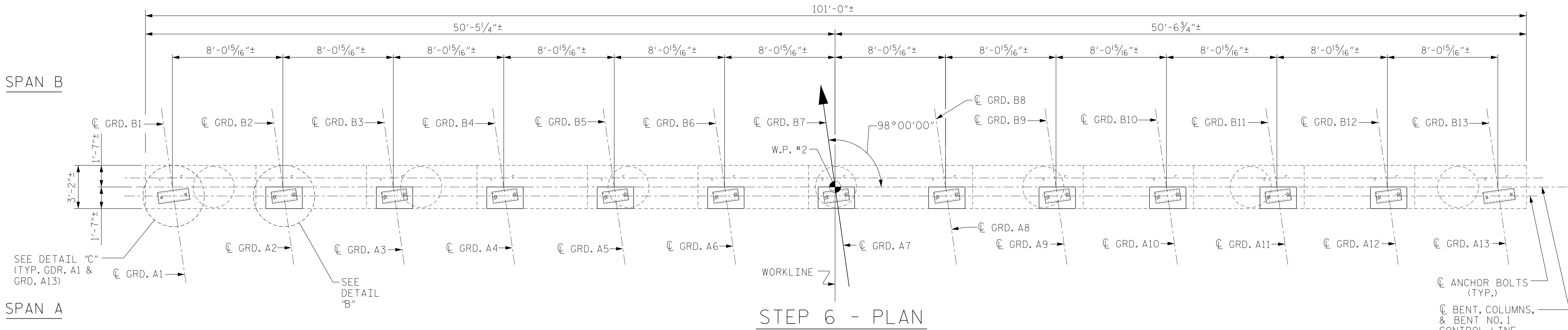
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BRIDGE NO. 316

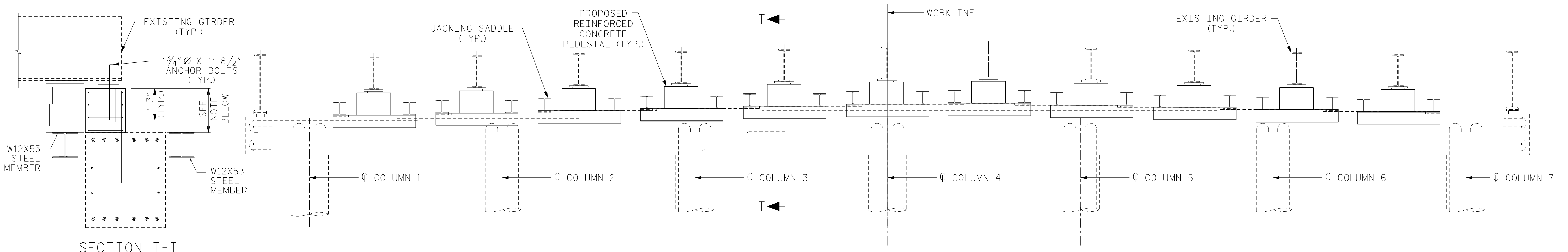
SHEET 4 OF 5

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			25



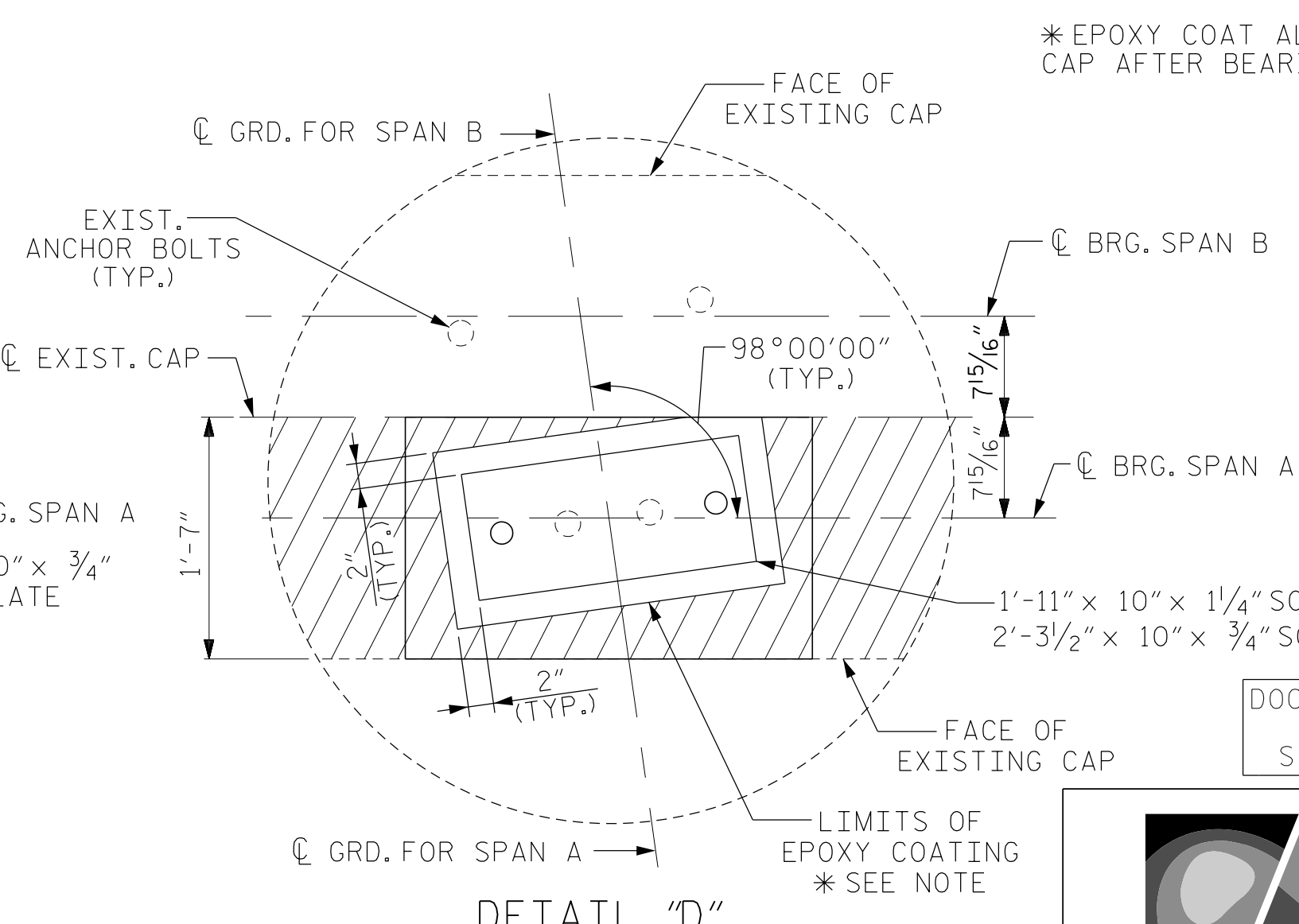
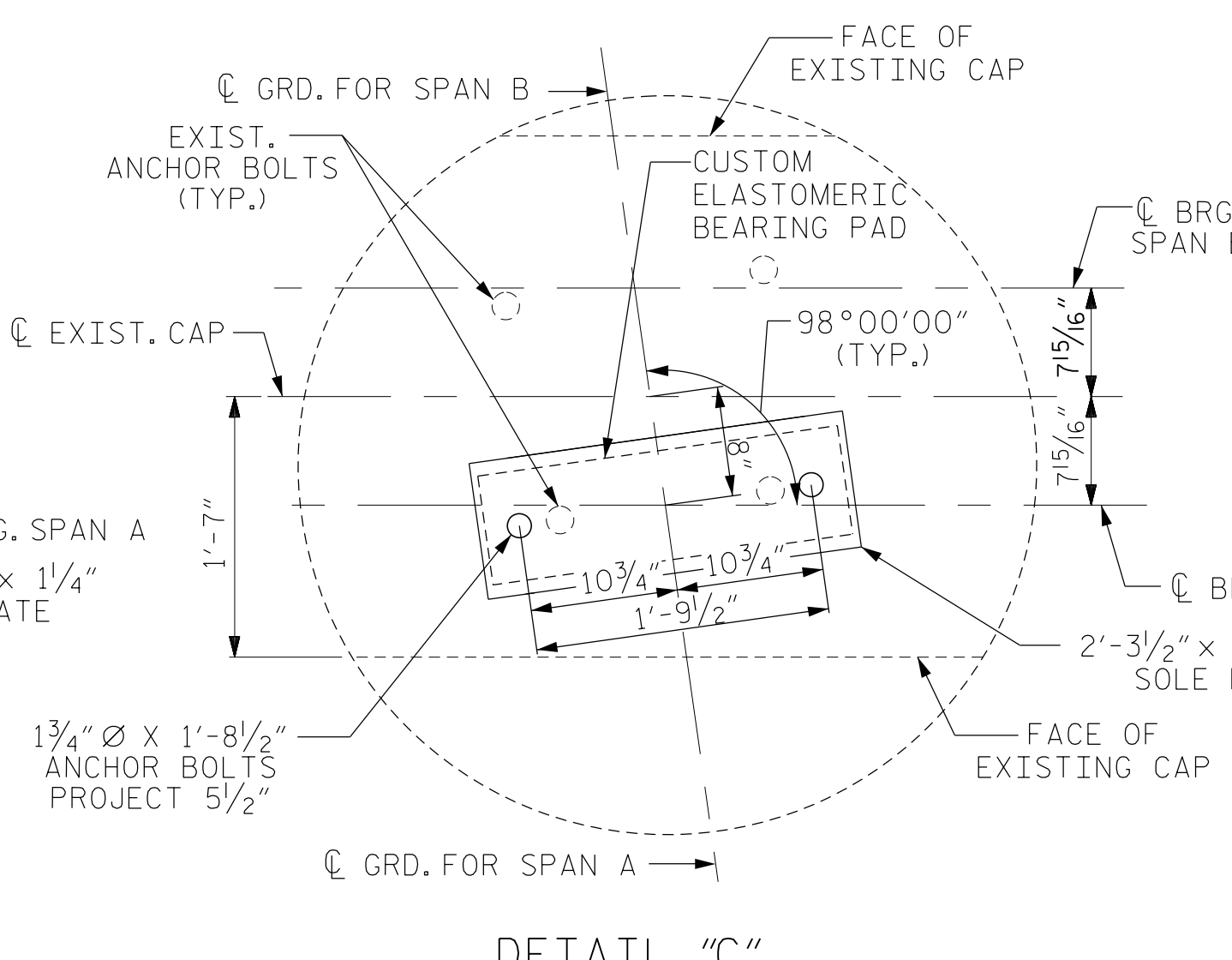
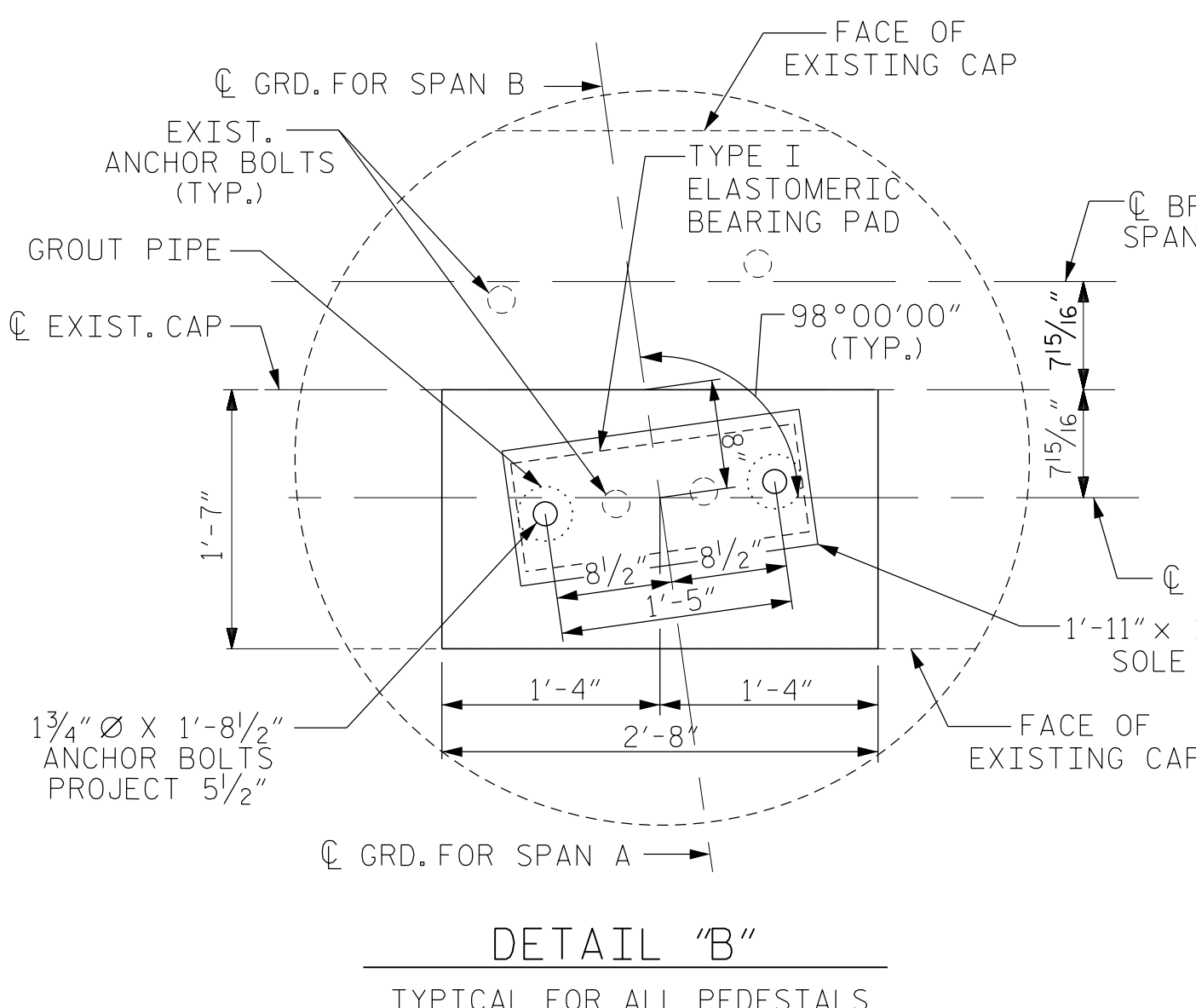


NOTE: JACKING SADDLE AND HYDRAULIC JACKING SYSTEM NOT SHOWN FOR CLARITY FOR TYPICAL BENT CAP EPOXY COATING LIMITS, SEE DETAIL "D".

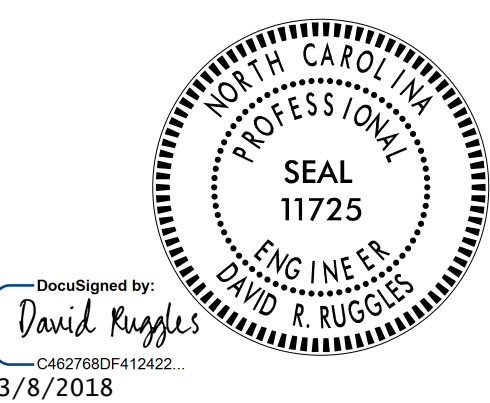


FOR DIMENSION AND REINFORCEMENT IN PEDESTAL, SEE SECTION G-G CONTRACTOR TO ESTABLISH HEIGHT. SEE STAGING NOTES. APPROXIMATE HEIGHT IS 1'-8 1/4"±

HYDRAULIC JACKING SYSTEM BEHIND PROPOSED PEDESTAL NOT SHOWN FOR CLARITY



\*EPOXY COAT ALL HORIZONTAL SURFACES OF CAP AFTER BEARINGS HAVE BEEN INSTALLED.



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SHEET 5 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
BENT 1  
CONSTRUCTION STAGING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			
TOTAL SHEETS						25

WAKE 316  
3/8/2018  
017\_RockQuarryRehab\_Bent1(5of5).dgn  
USERdefault

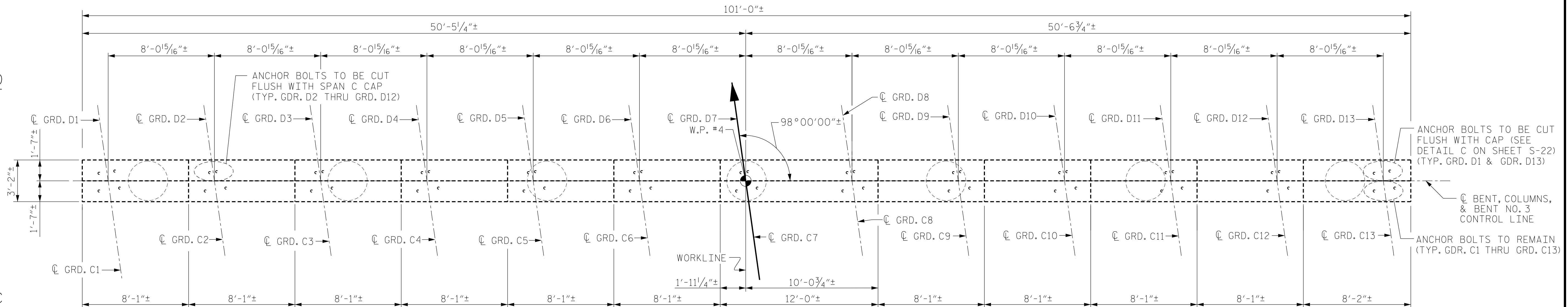
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CHECKED BY:	D. RUGGLES	DATE:	09-17
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE:	09-17

WAKE 316

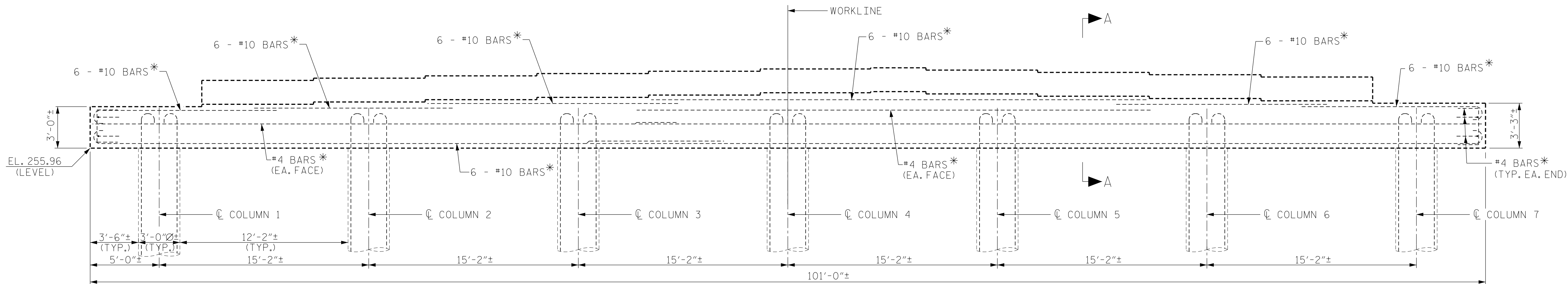
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SPAN D

SPAN C

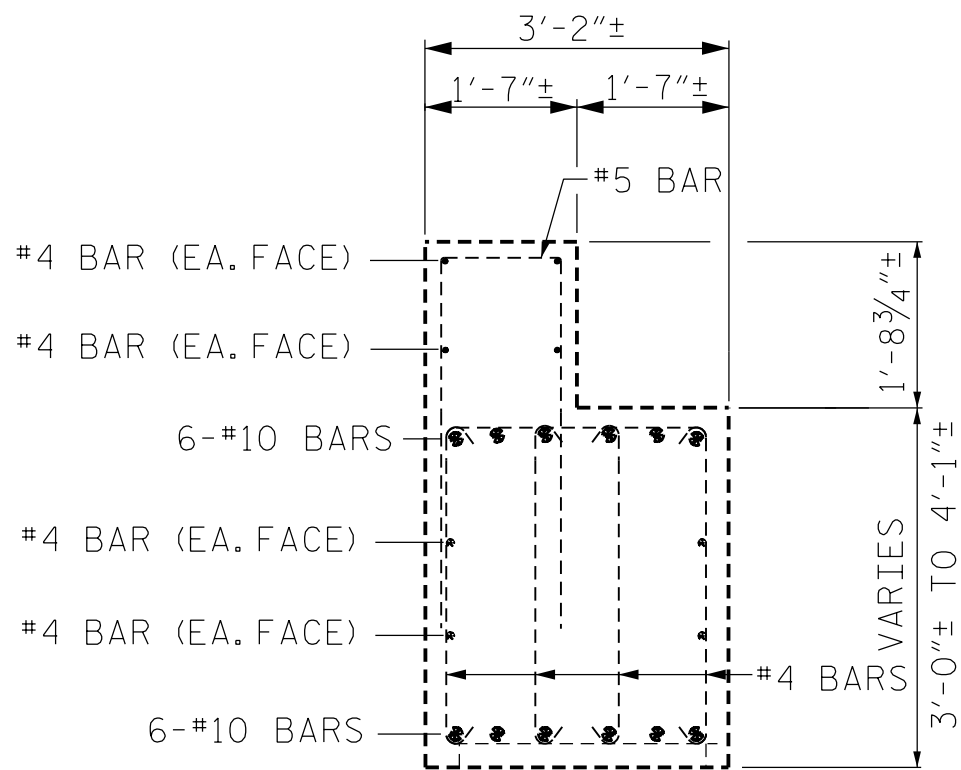


PLAN



ELEVATION

NOTE: ELEVATIONS ARE APPROXIMATE. ALL ELEVATIONS TO BE VERIFIED BY CONTRACTOR.  
\*BAR SIZE AND NUMBER ARE AS SHOWN ON CONSTRUCTION PLANS.  
(IT IS ASSUMED THAT AS-BUILT CONDITION MATCHES CONSTRUCTION PLANS)



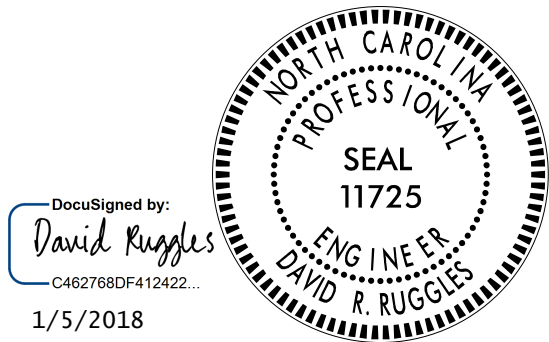
SECTION A-A

(COLUMN AND COLUMN STEEL NOT SHOWN FOR CLARITY)  
(PEDESTAL REINFORCEMENT MAY NOT EXIST)

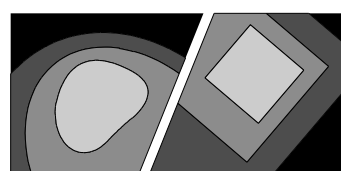
EXISTING CONDITIONS - BENT 3

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 1 OF 5



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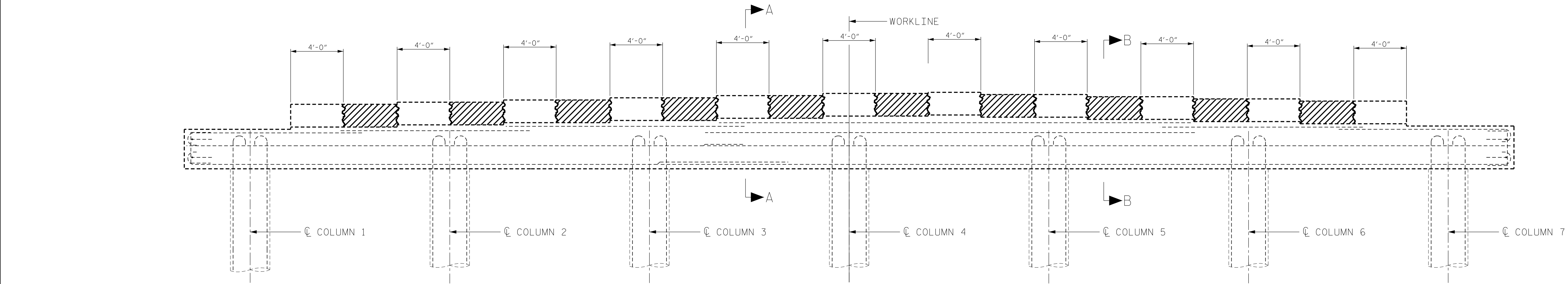
SUBSTRUCTURE  
BENT 3  
EXISTING CONDITIONS

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

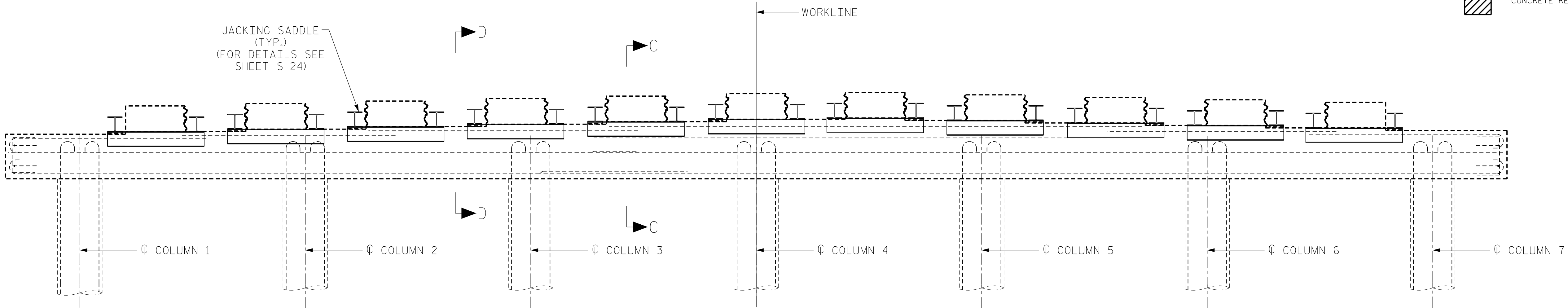


WAKE 316

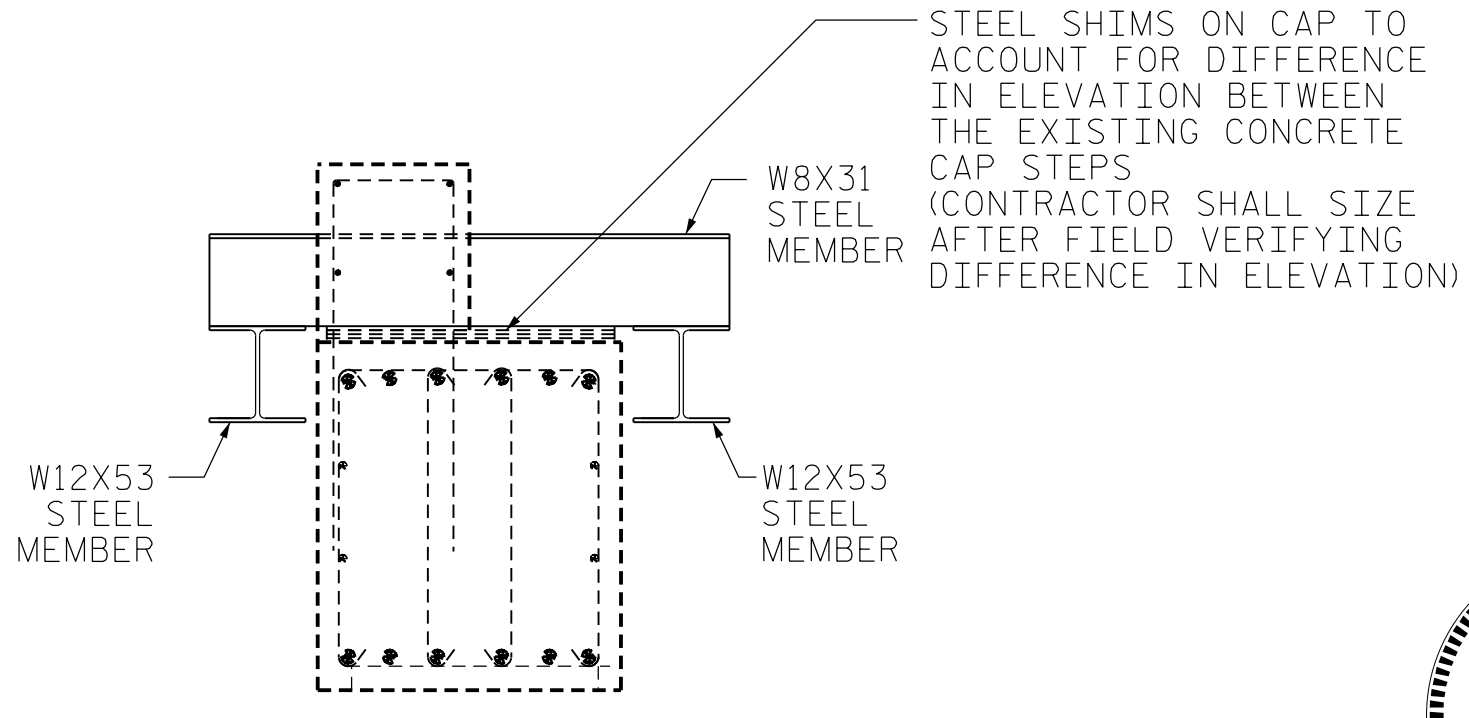
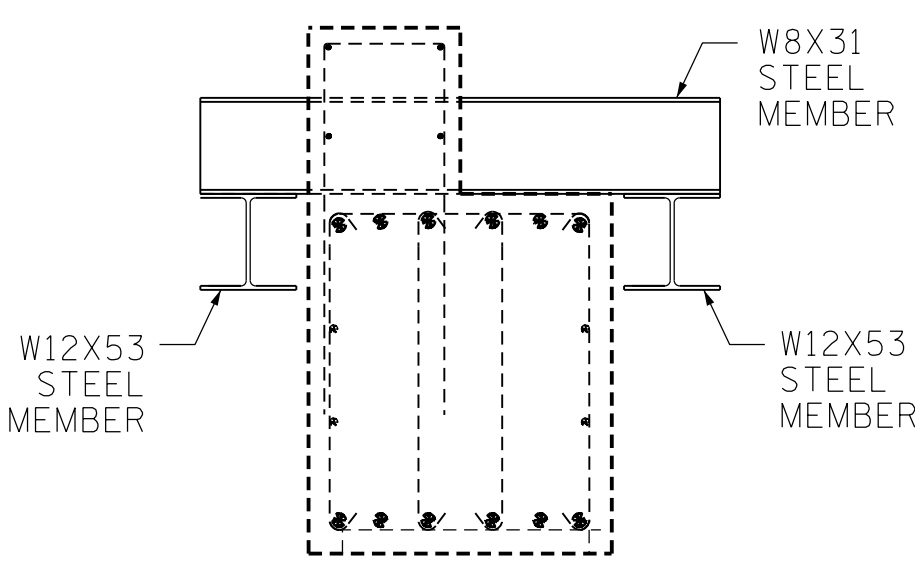
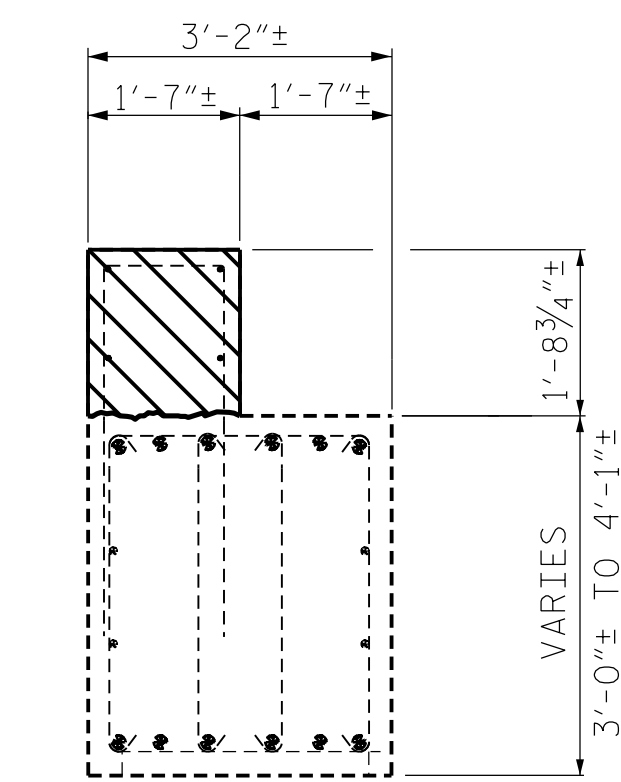
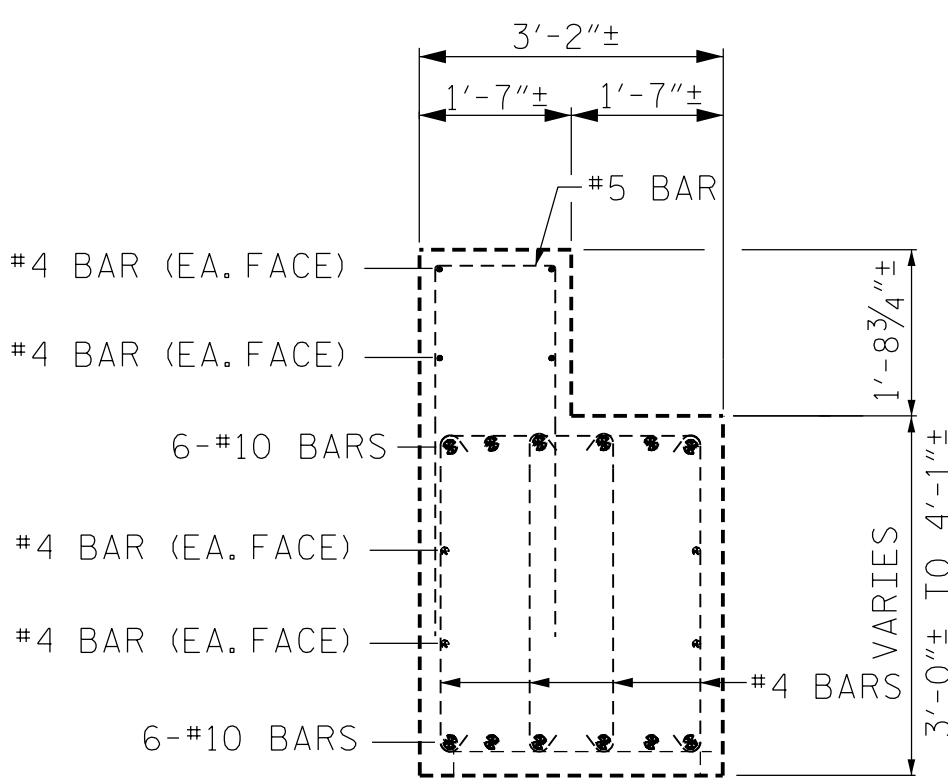
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STEP 1



STEP 2



SECTION C-C

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24

SECTION D-D

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
FOR FULL JACKING SADDLE DETAILS, SEE SHEET S-24

LEGEND



PROJECT NO. 17BP.5.H.4

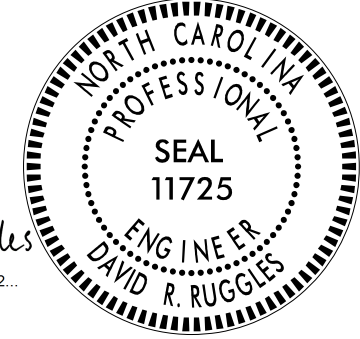
WAKE COUNTY

BRIDGE NO. 316

SHEET 2 OF 5

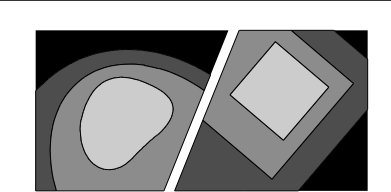
STATE OF NORTH CAROLINA  
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RALEIGH

SUBSTRUCTURE  
BENT 3  
CONSTRUCTION STAGING



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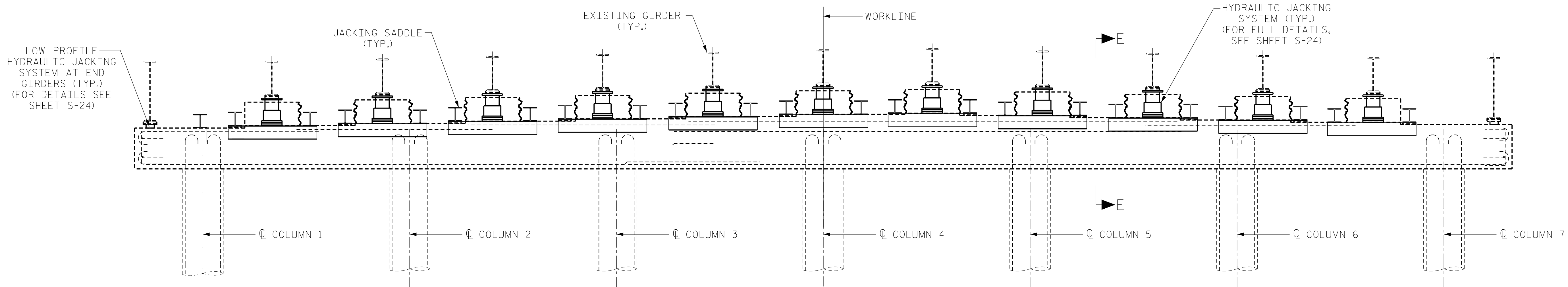
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CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

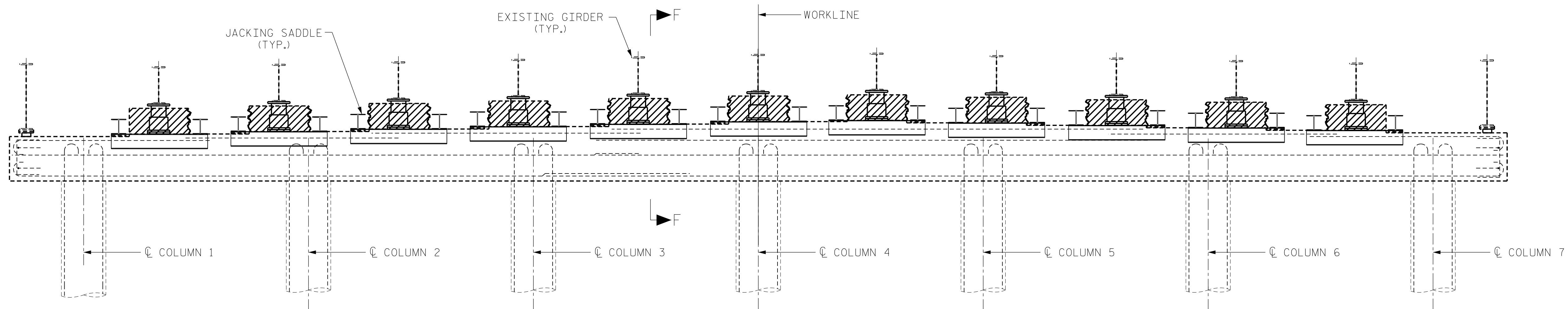


WAKE 316

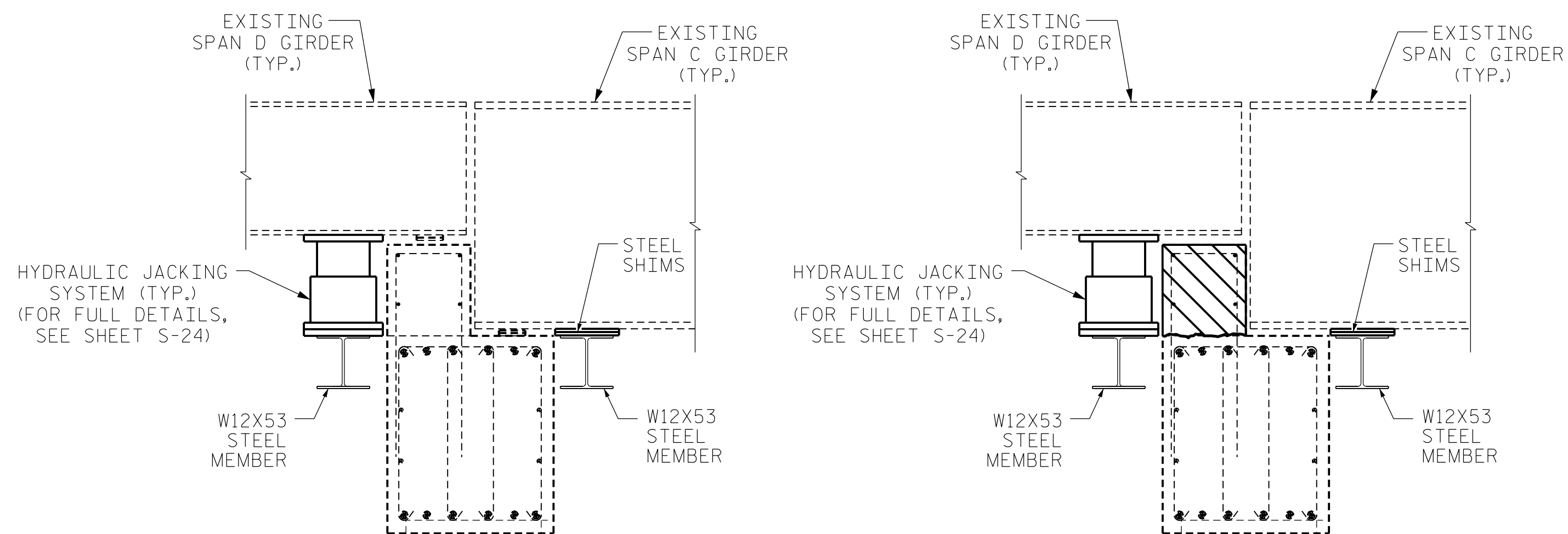
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### STEP 3



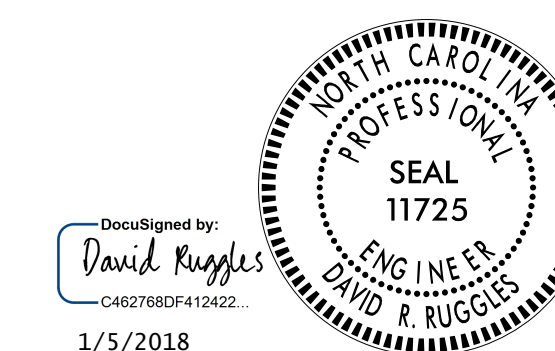
### STEP 4



### LEGEND



CONCRETE REMOVAL



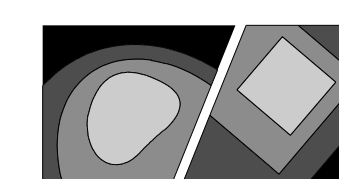
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FINAL UNLESS ALL  
SIGNATURES COMPLETED

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 3  
CONSTRUCTION STAGING



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REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

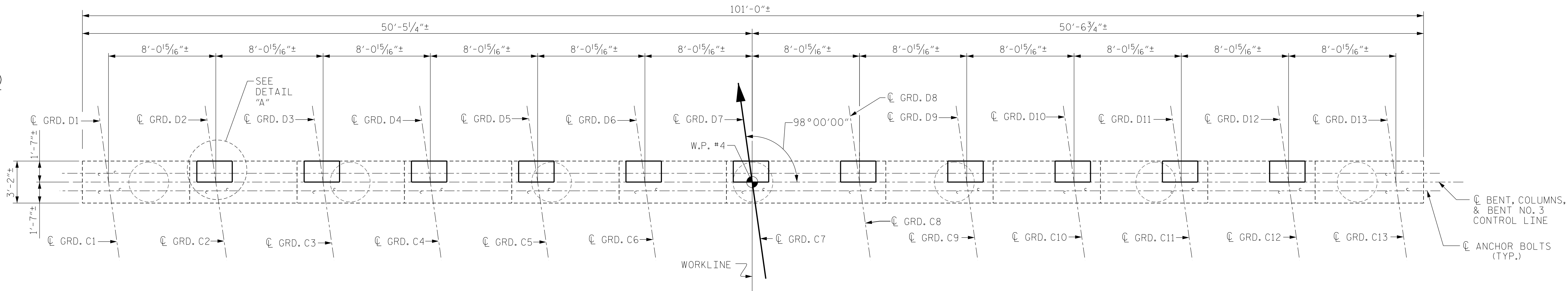
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CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

WAKE 316

\$\$\$\$SYTIME\$\$\$\$  
\$\$\$\$DGN\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$

DRAWN BY: E. PHELPS DATE: 06-17  
CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

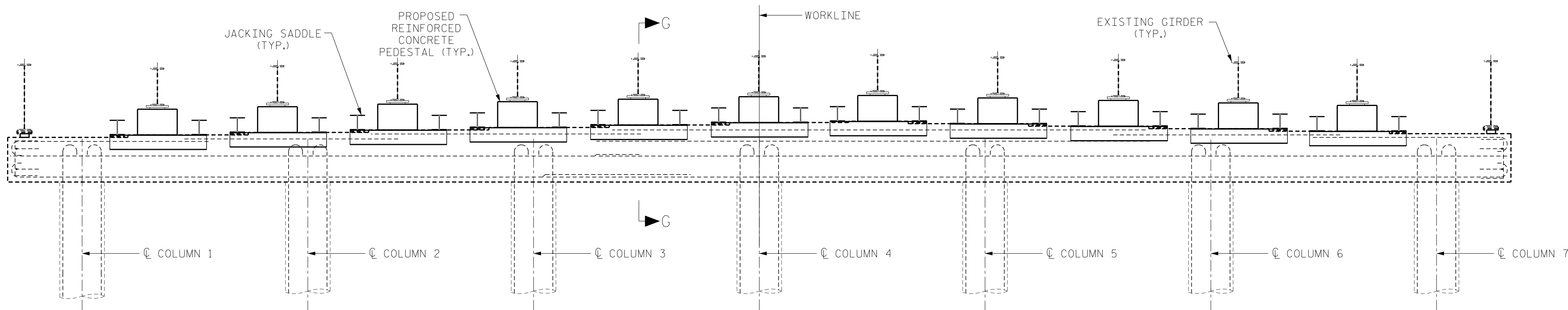
SPAN D



SPAN C

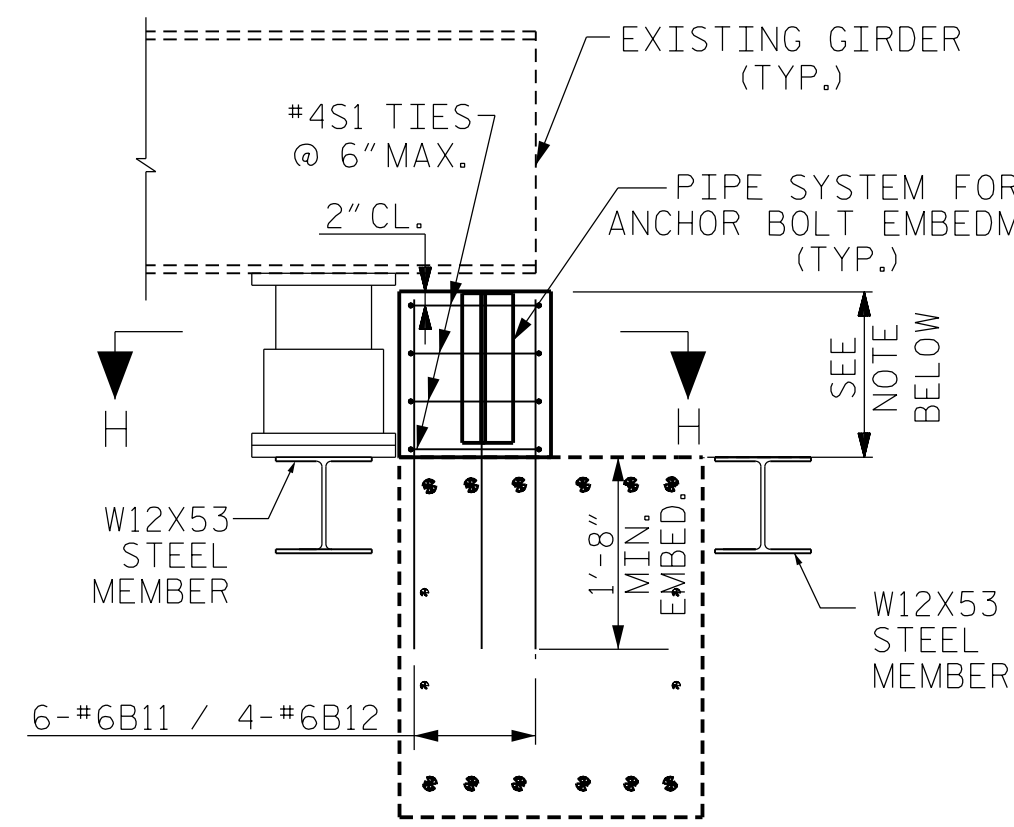
### STEP 5 - PLAN

NOTE: JACKING SADDLE AND HYDRAULIC JACKING SYSTEM NOT SHOWN FOR CLARITY



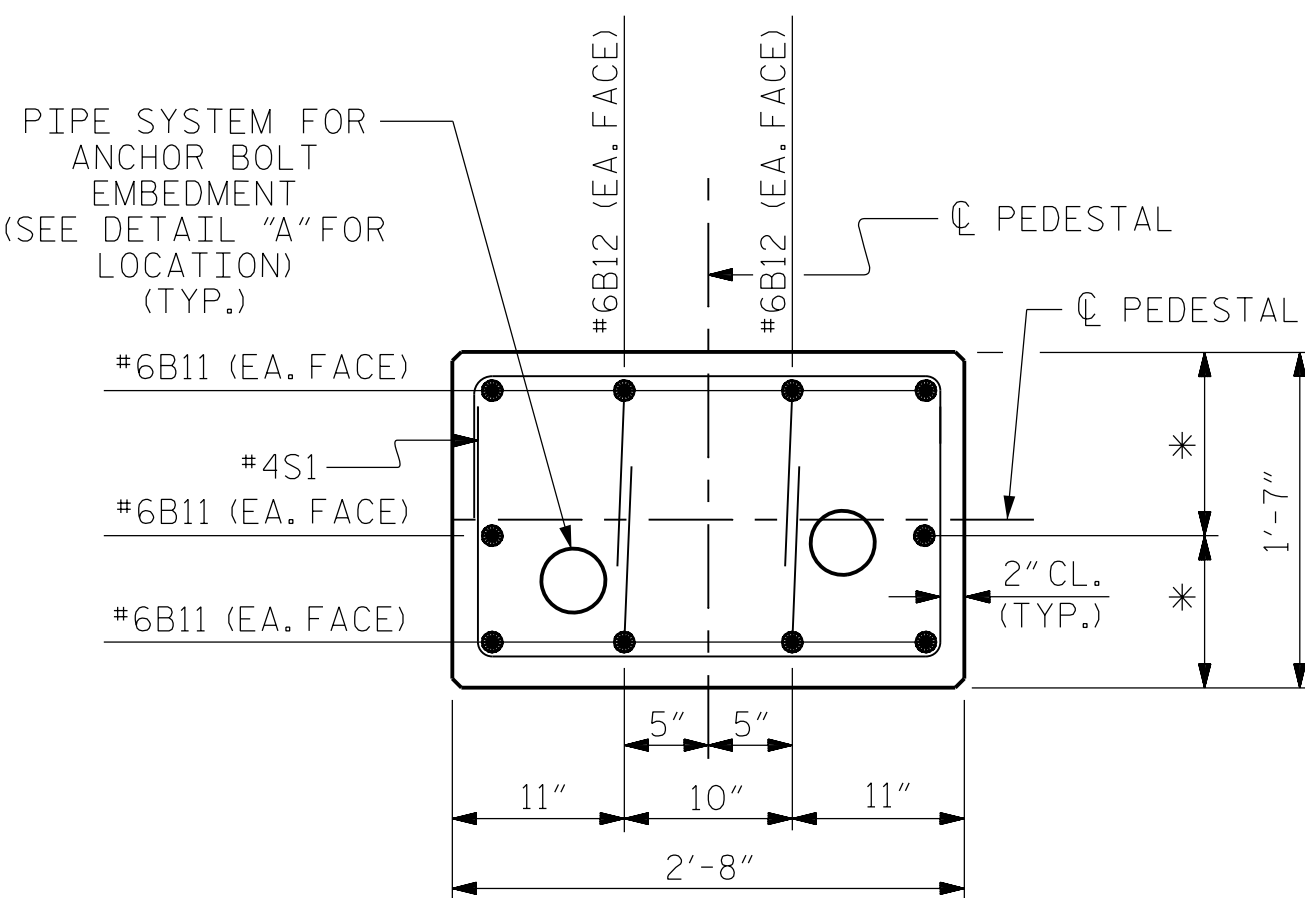
### STEP 5 - ELEVATION

HYDRAULIC JACKING SYSTEM BEHIND PROPOSED PEDESTAL NOT SHOWN FOR CLARITY



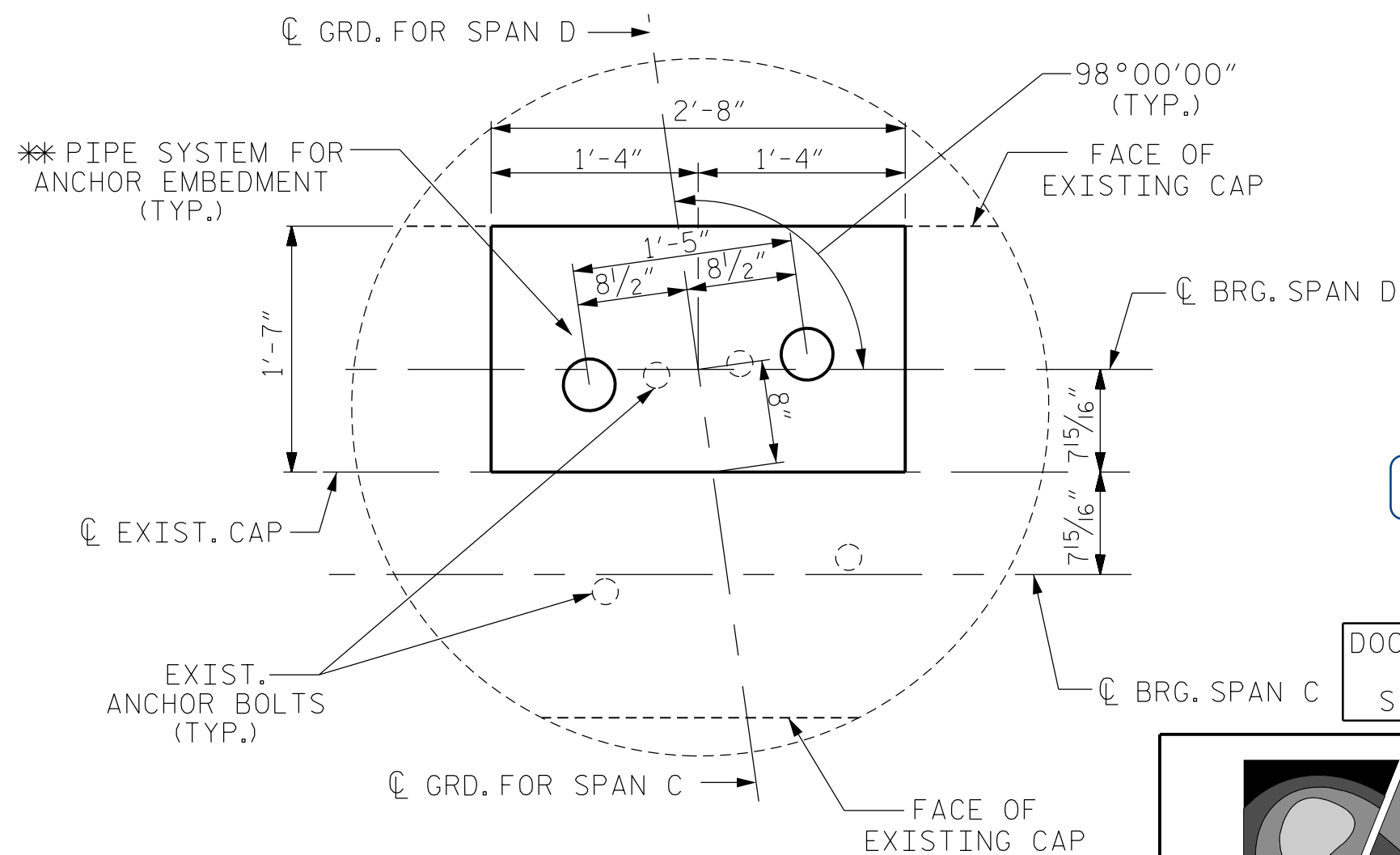
#### SECTION G-G

FOR DIMENSION AND REINFORCEMENT, SEE SECTION A-A  
CONTRACTOR TO ESTABLISH HEIGHT. SEE STAGING NOTES.  
APPROXIMATE HEIGHT IS 1'-8 1/4"±



#### SECTION H-H

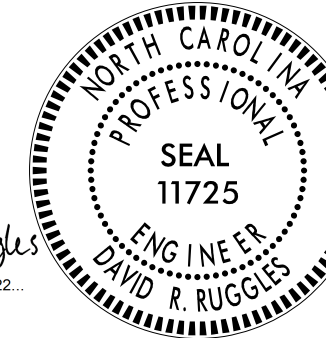
TYPICAL FOR ALL PEDESTALS  
\* POSITION BARS TO AVOID EXISTING  
LONGITUDINAL REINFORCEMENT IN EXISTING CAP



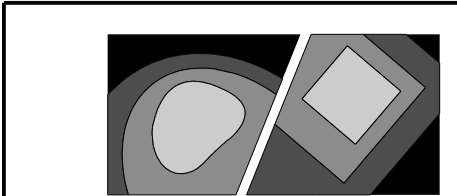
#### DETAIL "A"

TYPICAL FOR ALL PEDESTALS  
\* FOR DETAILS SEE "PIPE SYSTEM DETAIL" ON SHEET S-23

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WAKE COUNTY  
BRIDGE NO. 316

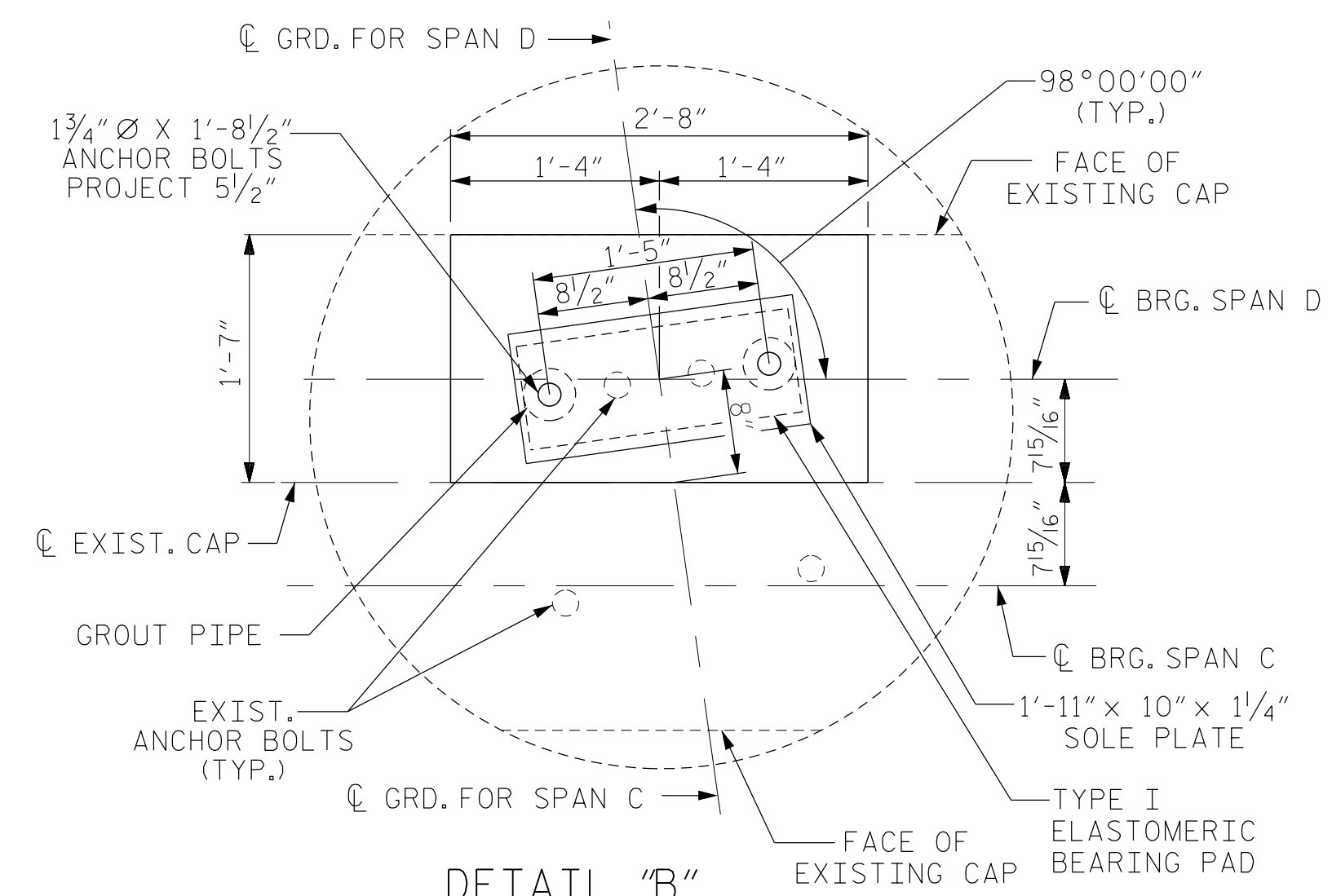
SHEET 4 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 3 CONSTRUCTION STAGING					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					25

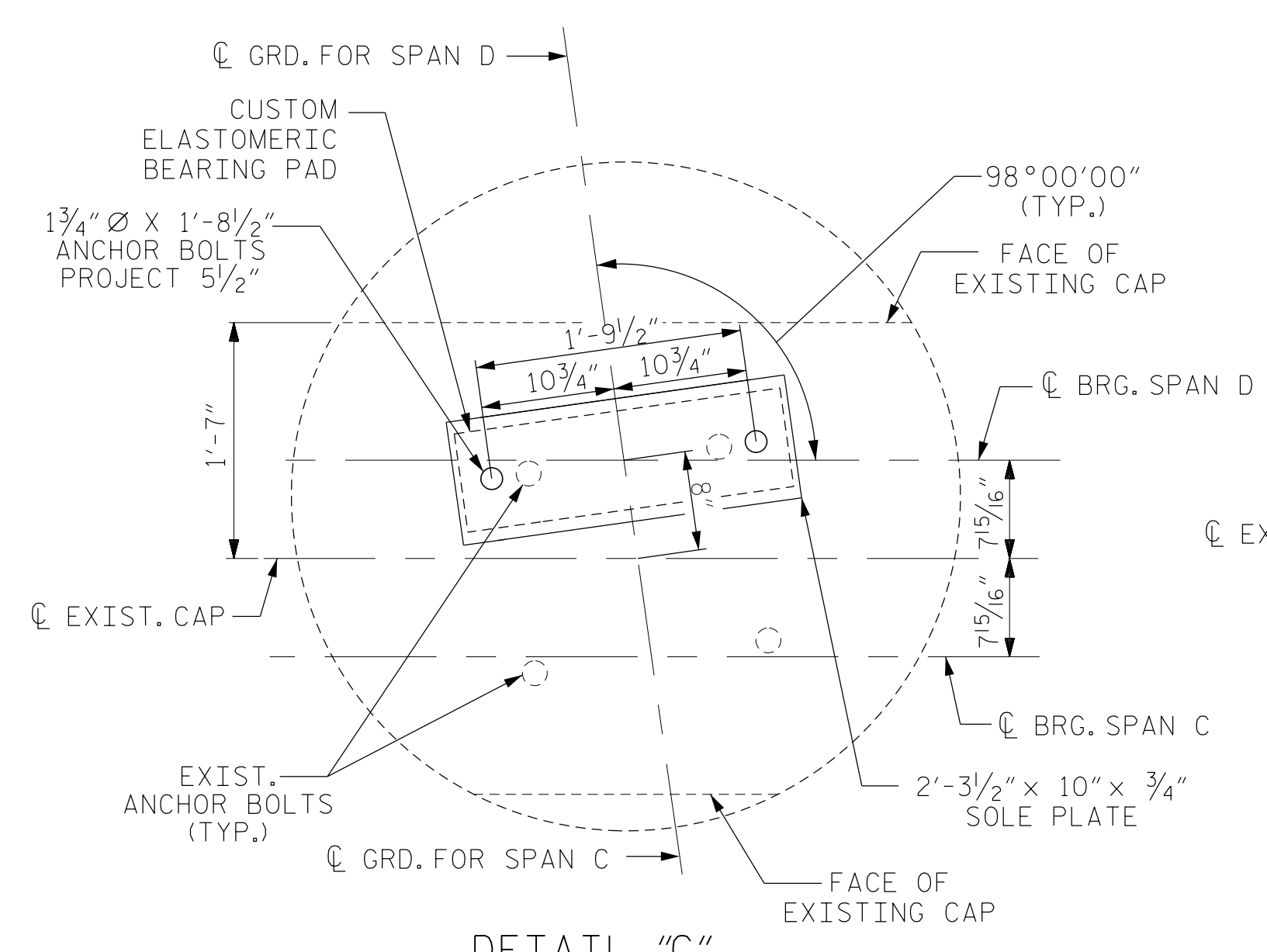


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CHECKED BY: D. RUGGLES DATE: 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 09-17

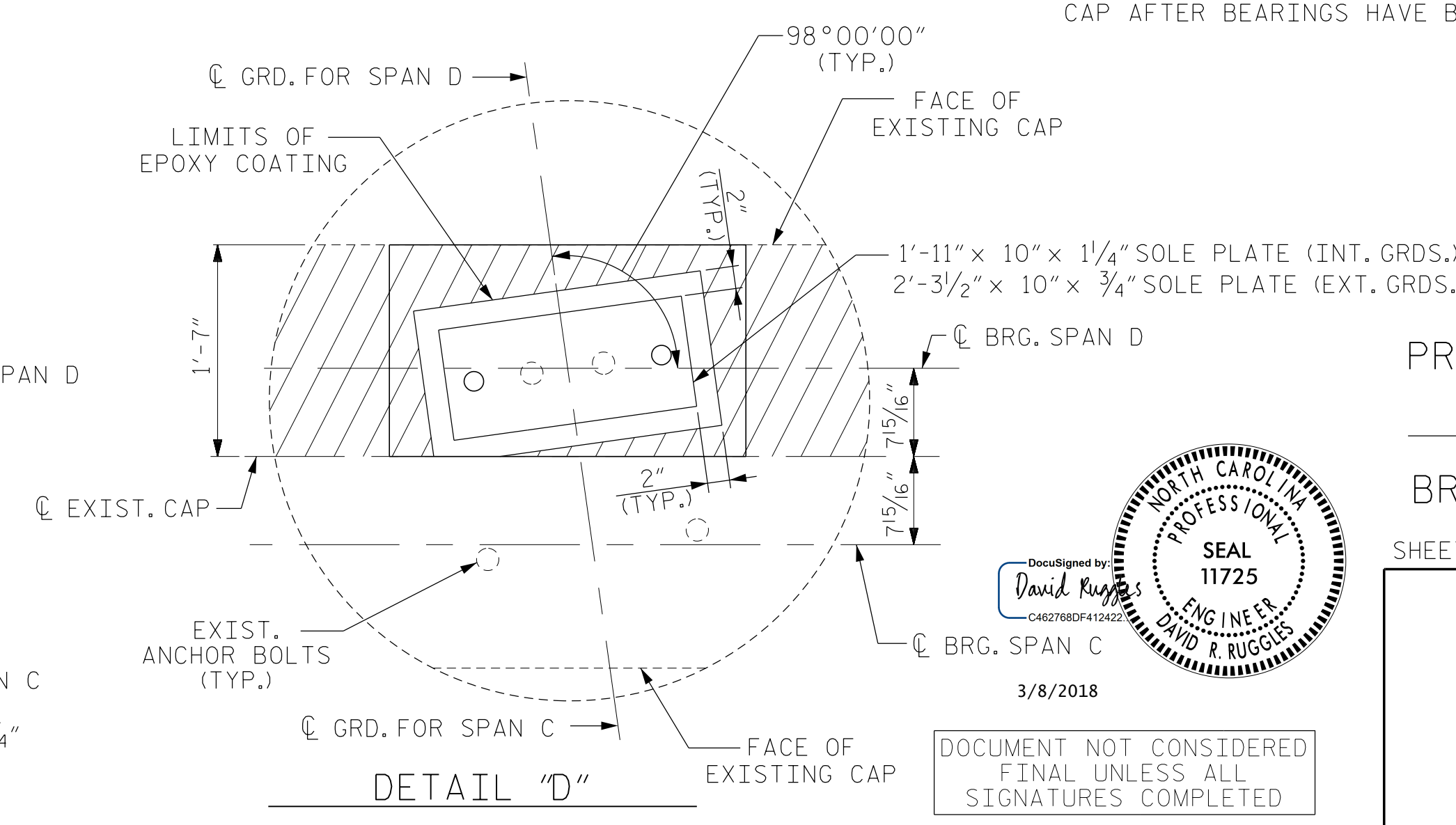
FOR DIMENSION AND REINFORCEMENT IN PEDESTAL, SEE SECTION G-G  
CONTRACTOR TO ESTABLISH HEIGHT. SEE STAGING NOTES.  
APPROXIMATE HEIGHT IS 1'-8 1/4"±



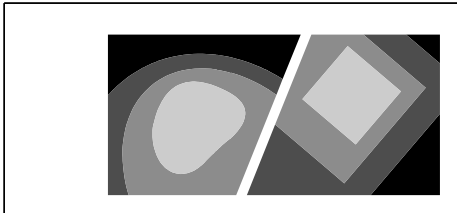
DETAIL "B"  
TYPICAL FOR ALL PEDESTALS



DETAIL "C"  
TYPICAL FOR EXTERIOR GIRDERS  
ADHESIVE ANCHOR TO BE INSTALLED THROUGH HOLES IN BEARING PLATES.  
CONTRACTOR SHALL ENSURE THAT HOLES ARE CLEAN AND SHALL INSTALL  
ANCHORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

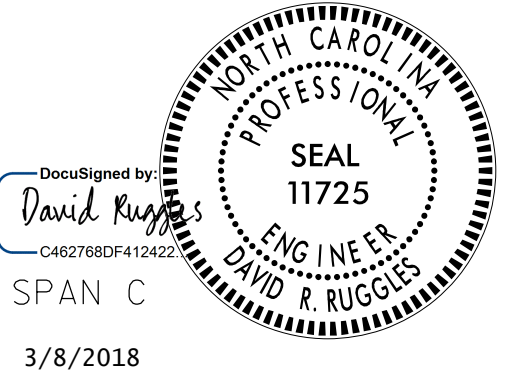


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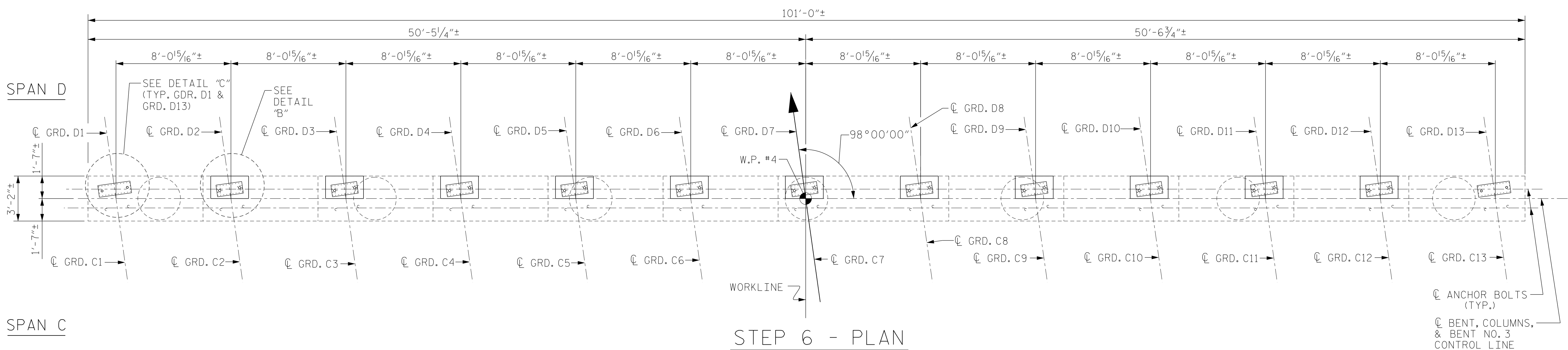
PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316

SHEET 5 OF 5

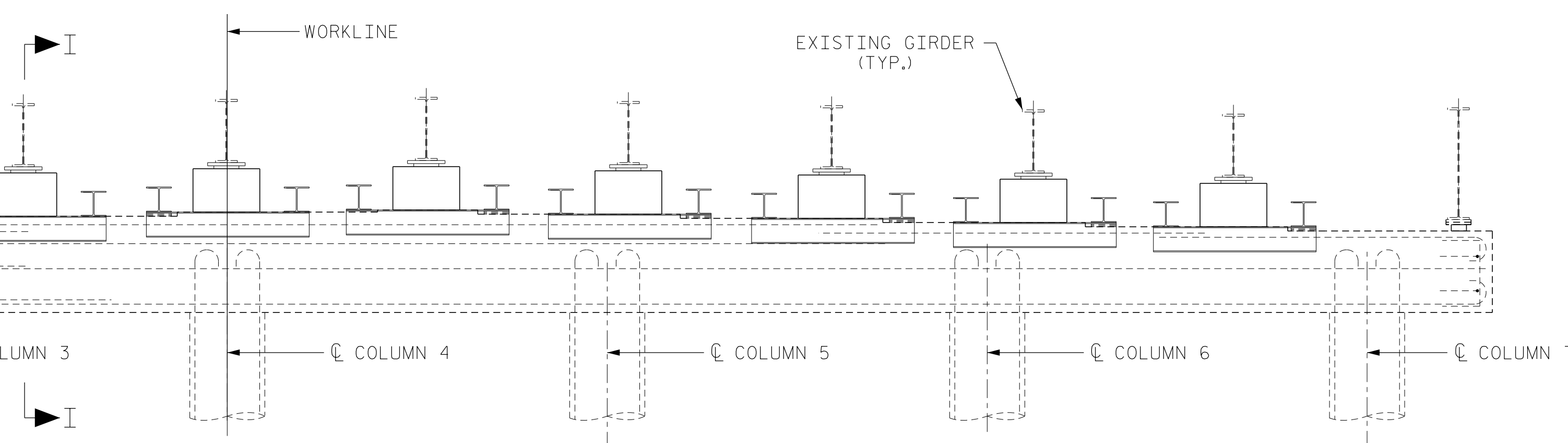
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-22
2			4			

TOTAL SHEETS 25

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
BENT 3  
CONSTRUCTION STAGING



NOTE: JACKING SADDLE AND HYDRAULIC JACKING SYSTEM NOT SHOWN FOR CLARITY  
FOR TYPICAL BENT CAP EPOXY COATING LIMITS, SEE DETAIL "D".



STEP 6 - ELEVATION

HYDRAULIC JACKING SYSTEM BEHIND PROPOSED PEDESTAL NOT SHOWN FOR CLARITY

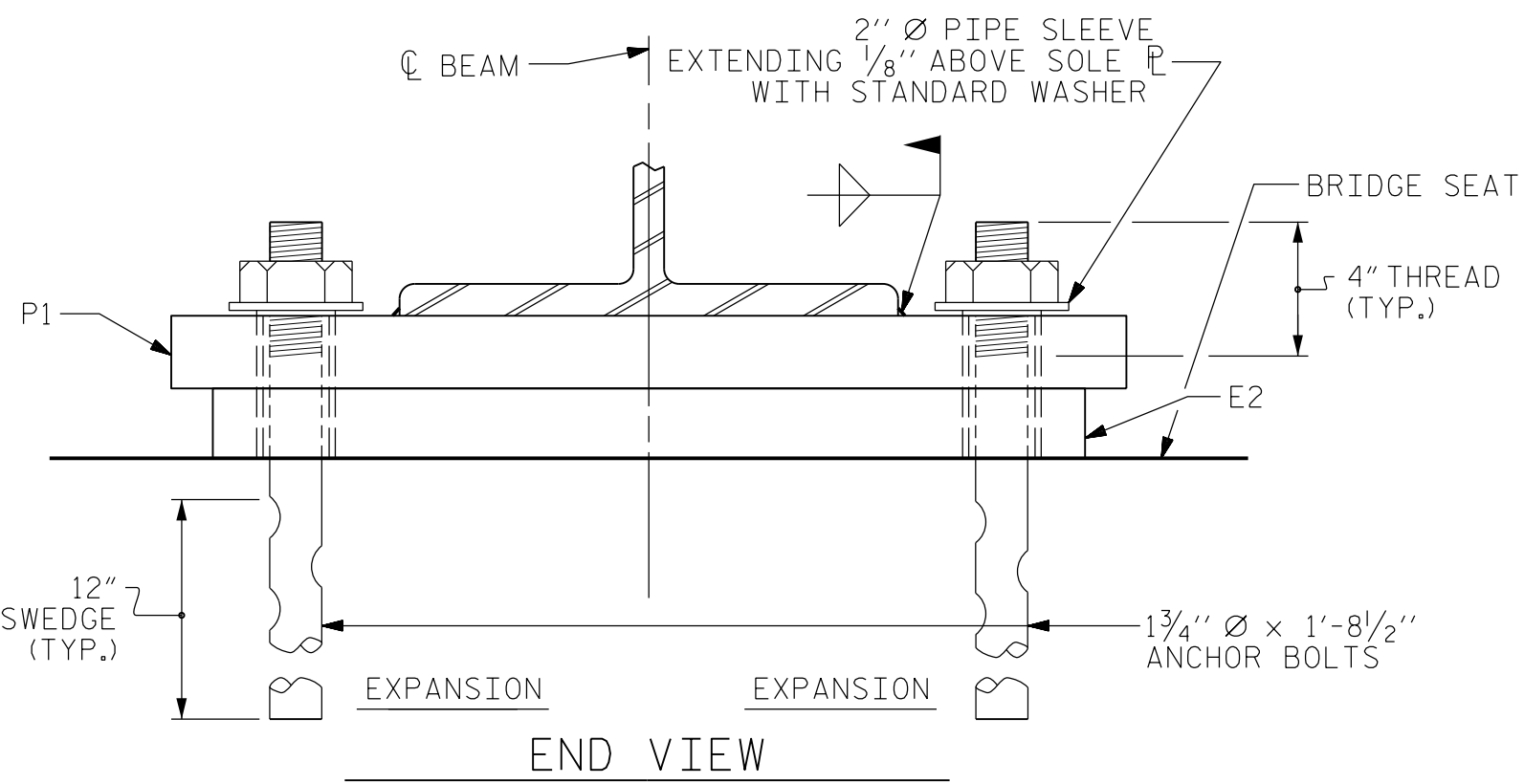
\*EPOXY COAT ALL HORIZONTAL SURFACES OF  
CAP AFTER BEARINGS HAVE BEEN INSTALLED.



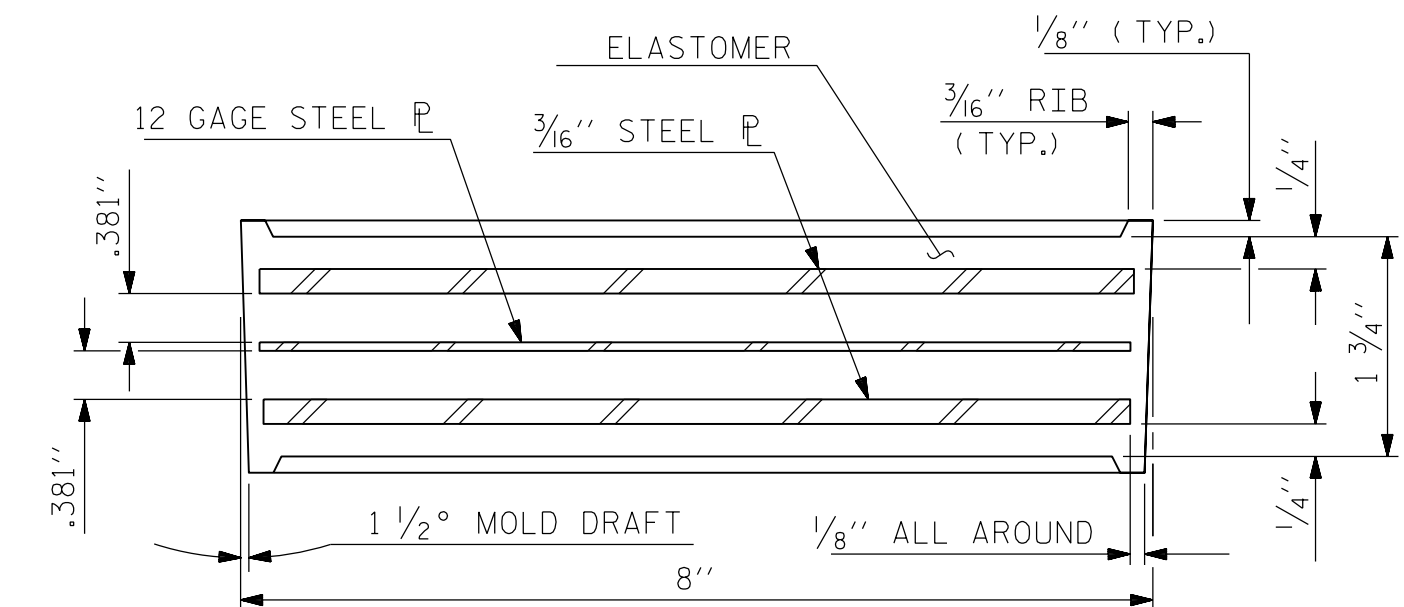
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CHECKED BY: D. RUGGLES DATE : 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 09-17

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE I	140 k
CUSTOM	140 k

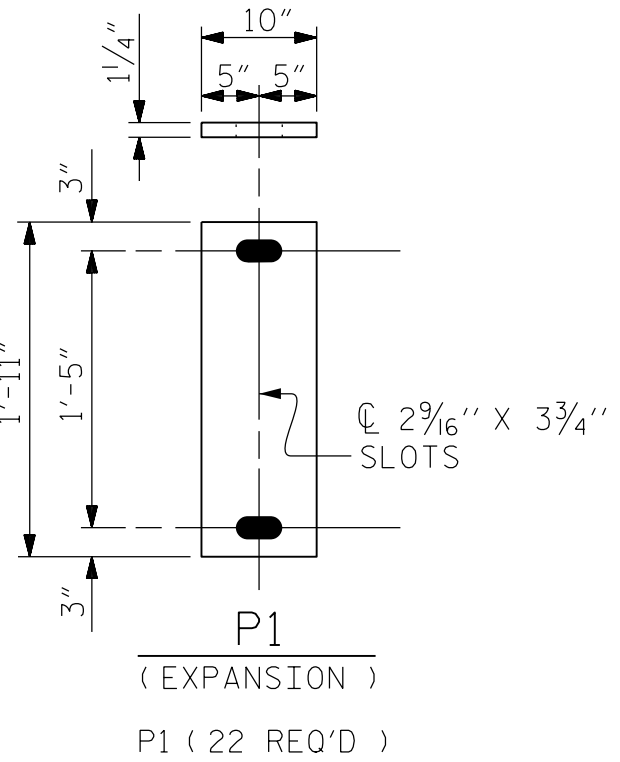


TYPICAL SECTION OF ELASTOMERIC BEARINGS

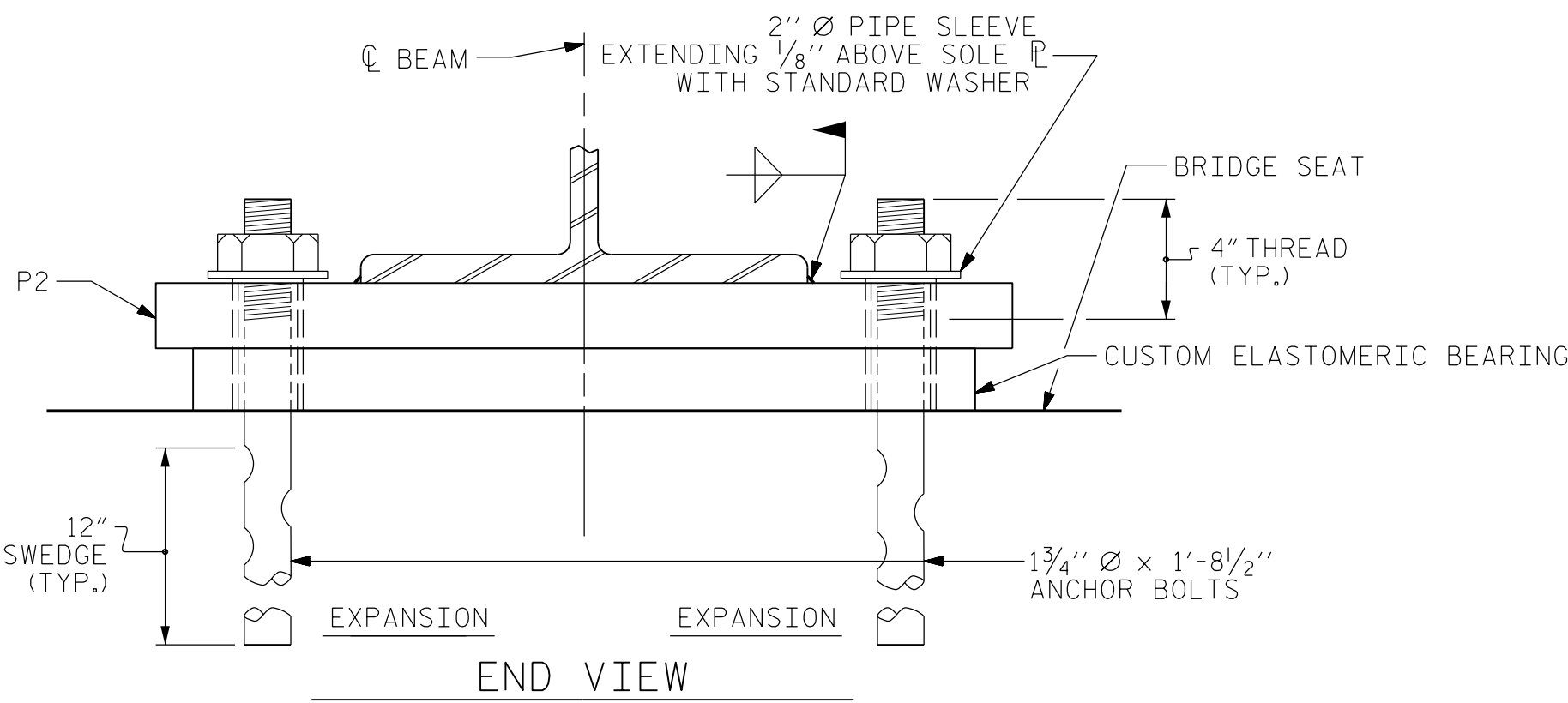


PLAN VIEW OF ELASTOMERIC BEARING  
TYPE I

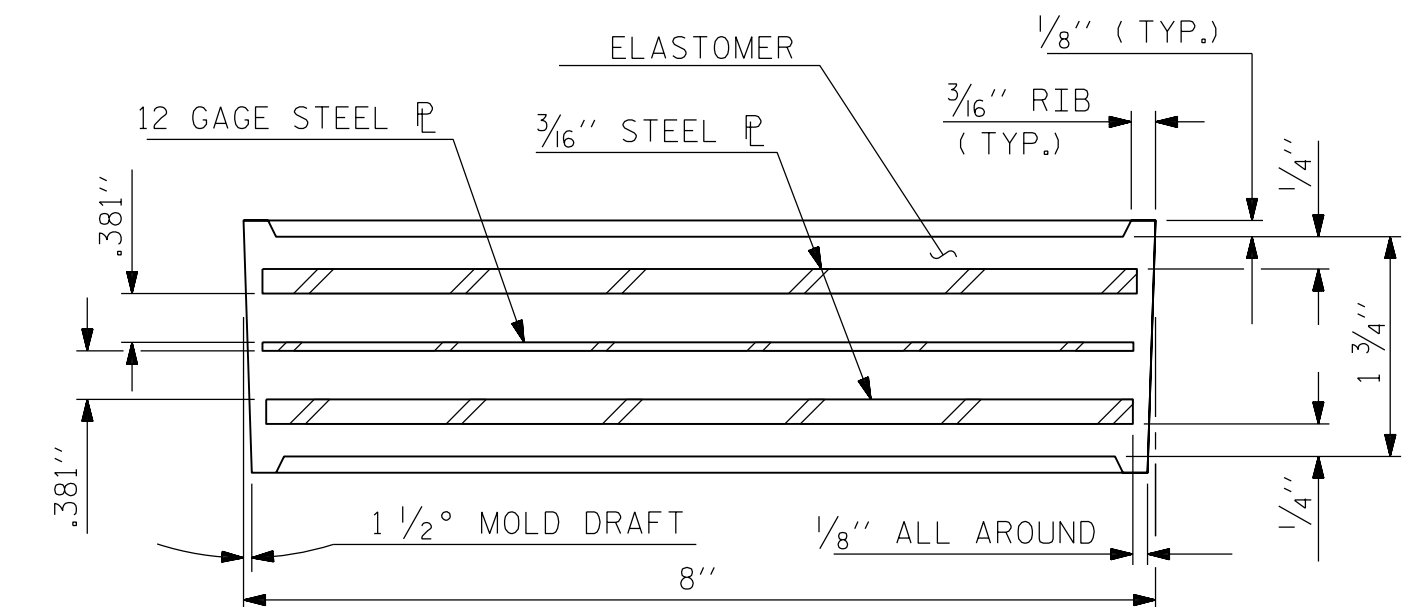
E2 ( 22 REQ'D )



SOLE PLATE DETAILS ( P1 )

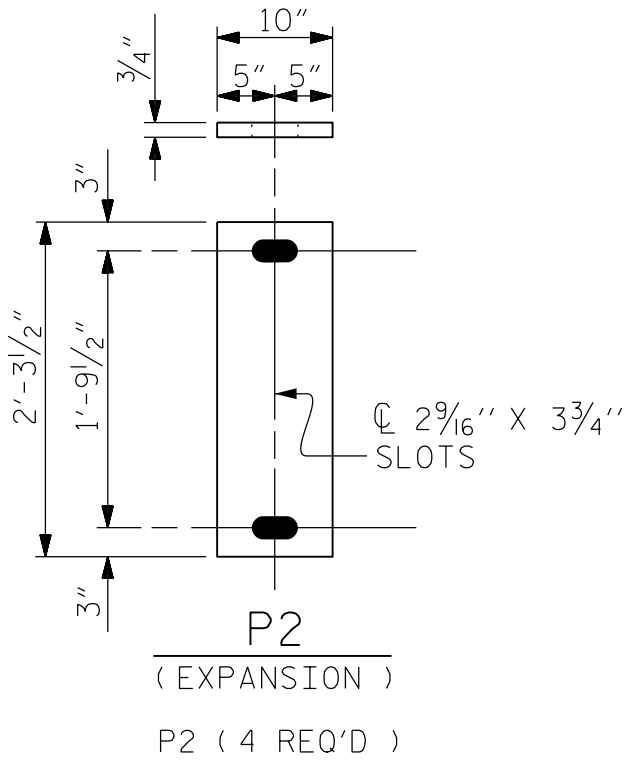


TYPICAL SECTION OF ELASTOMERIC BEARINGS

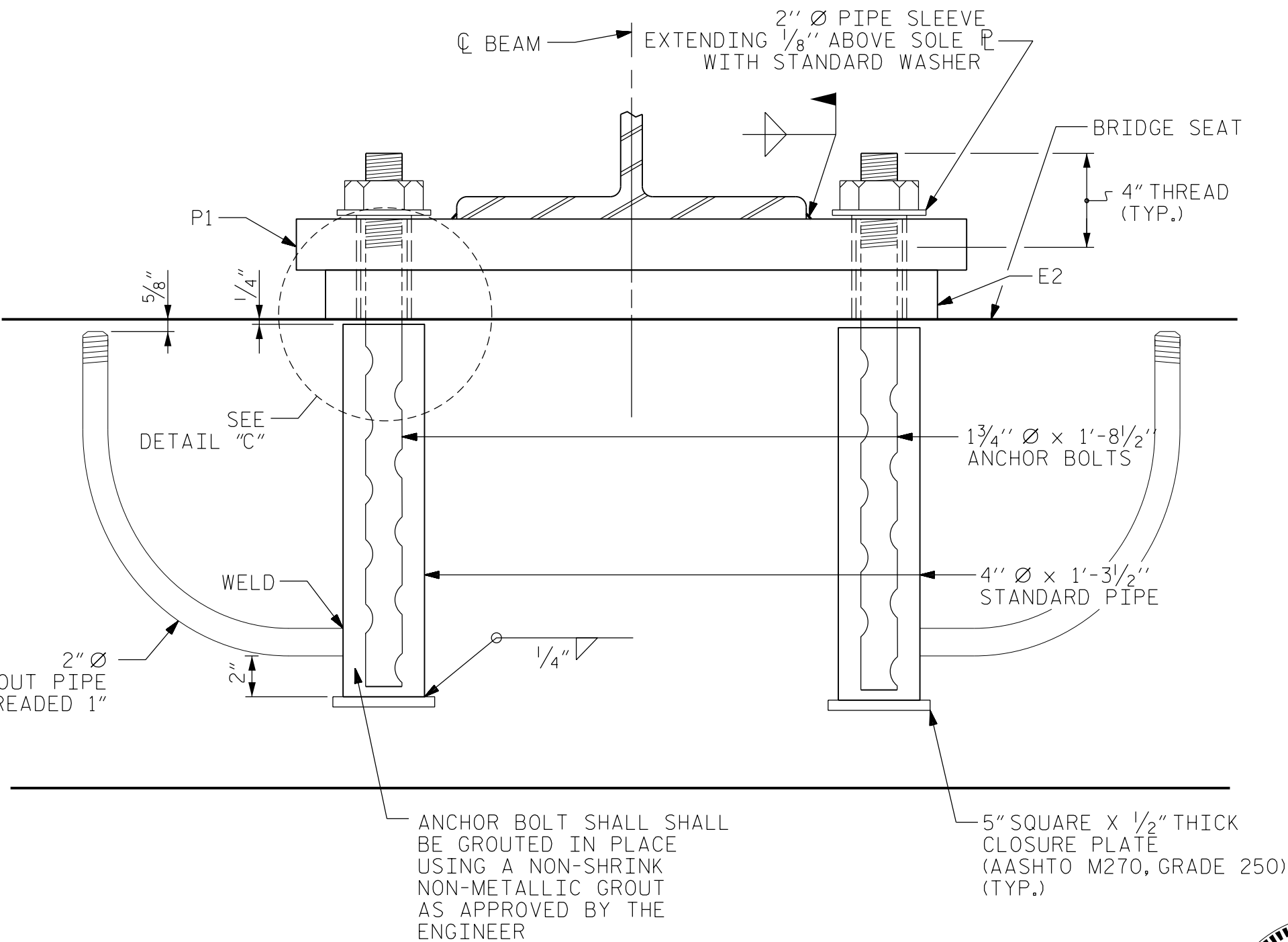
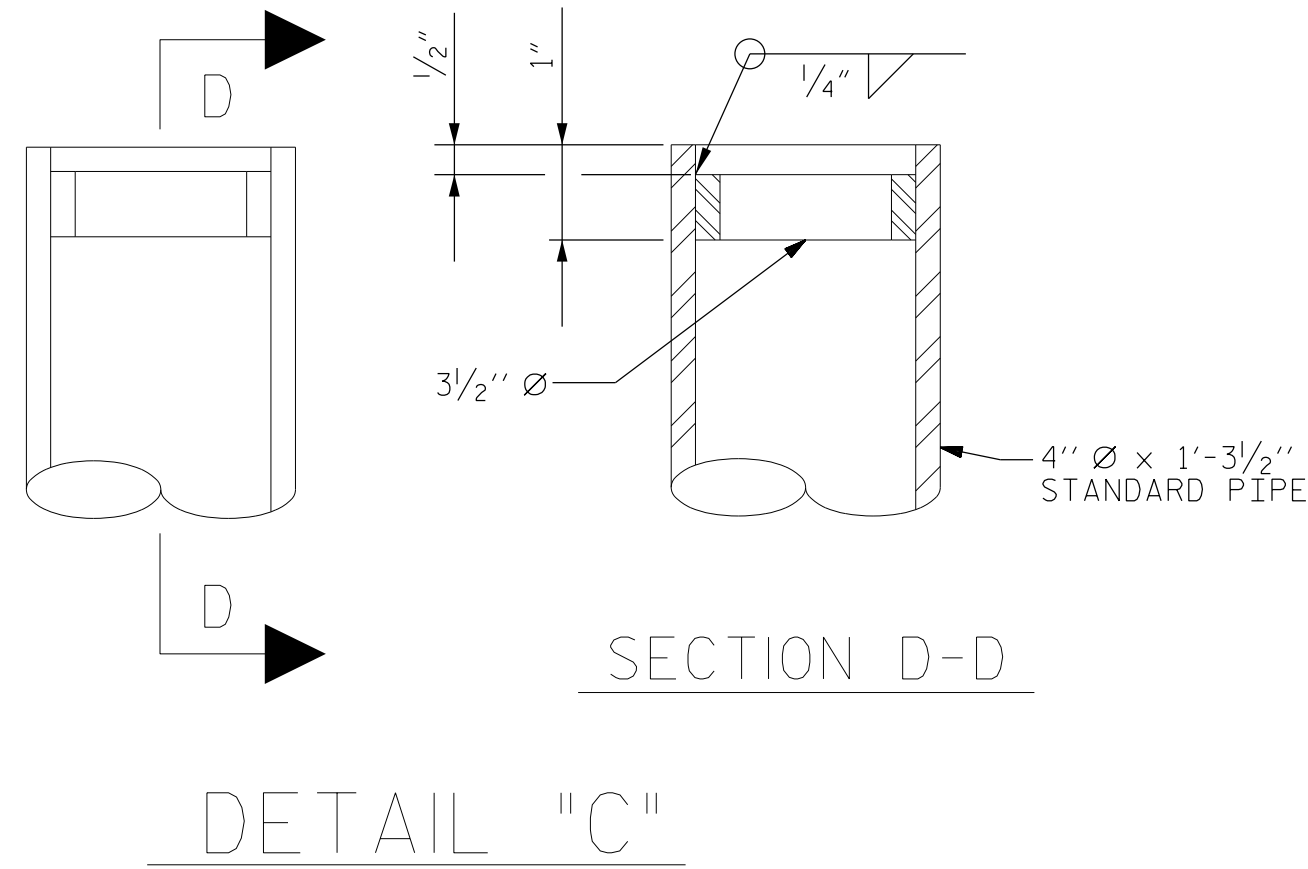


PLAN VIEW OF ELASTOMERIC BEARING  
CUSTOM

CUSTOM ( 4 REQ'D )

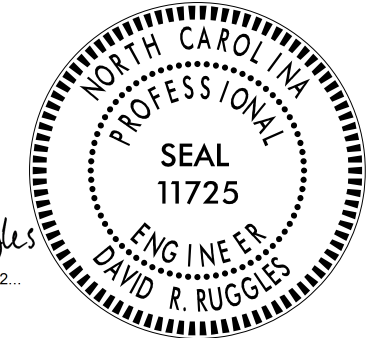


SOLE PLATE DETAILS ( P2 )

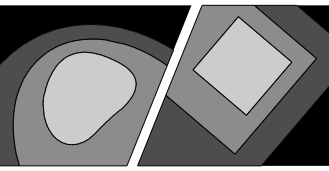


PIPE SYSTEM DETAIL  
(INTERIOR GIRDERS ONLY)

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CA02788DF412422  
1/5/2018



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## NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270, GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270, GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270, GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

PROJECT NO. 17BP.5.H.4

WAKE COUNTY

BRIDGE NO. 316

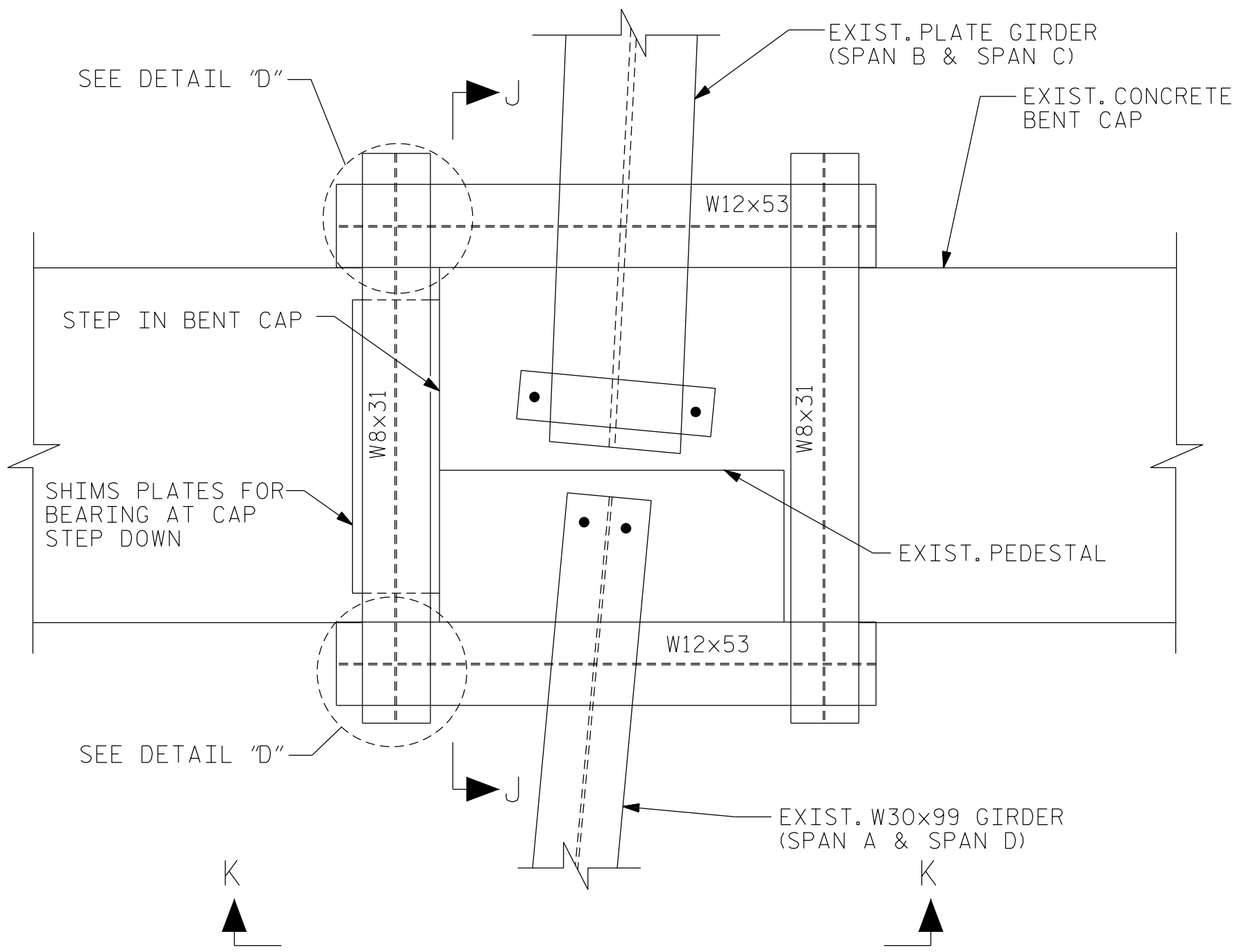
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

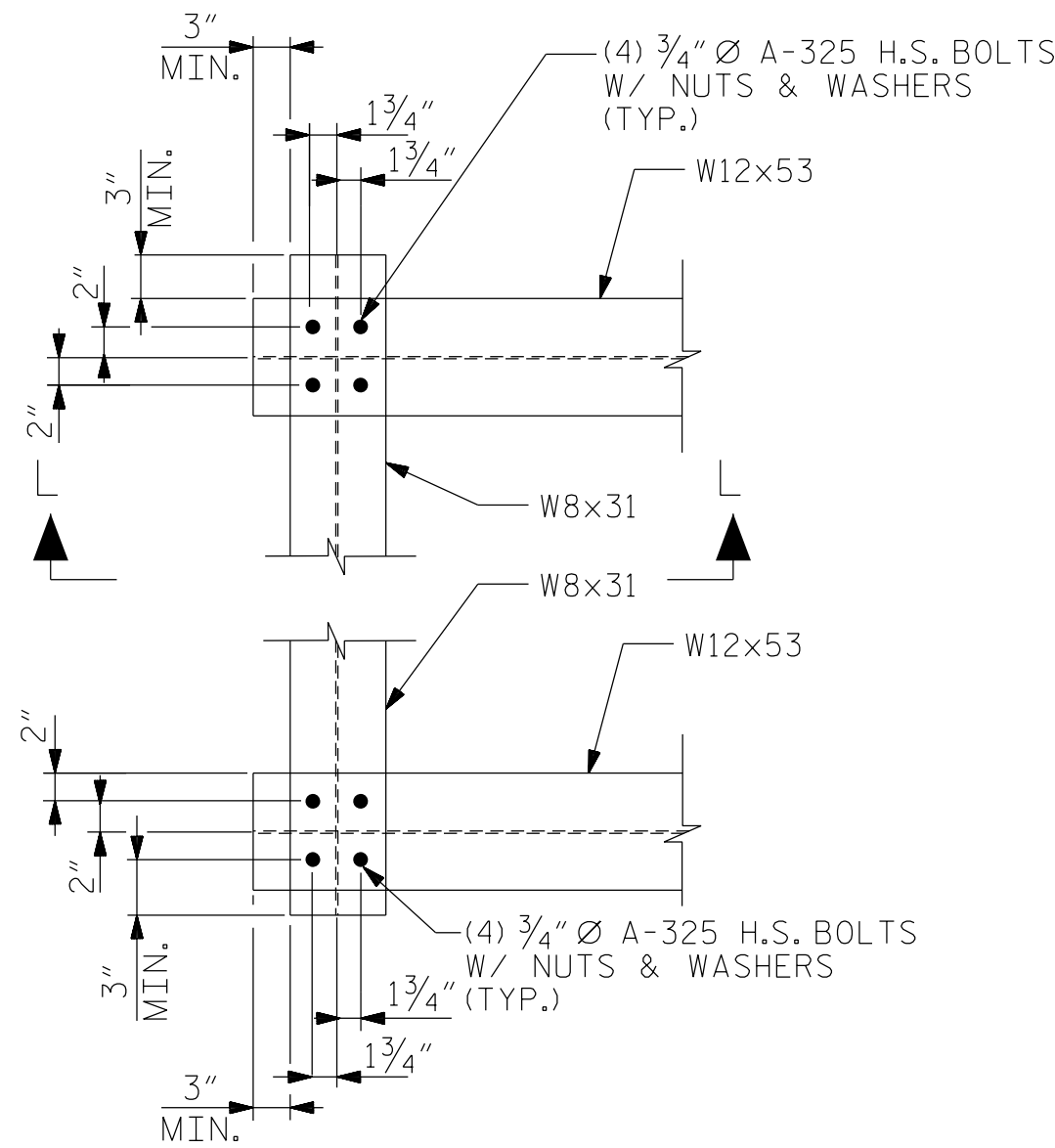
SUBSTRUCTURE  
BENTS 1 & 3  
BEARING DETAILS

REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

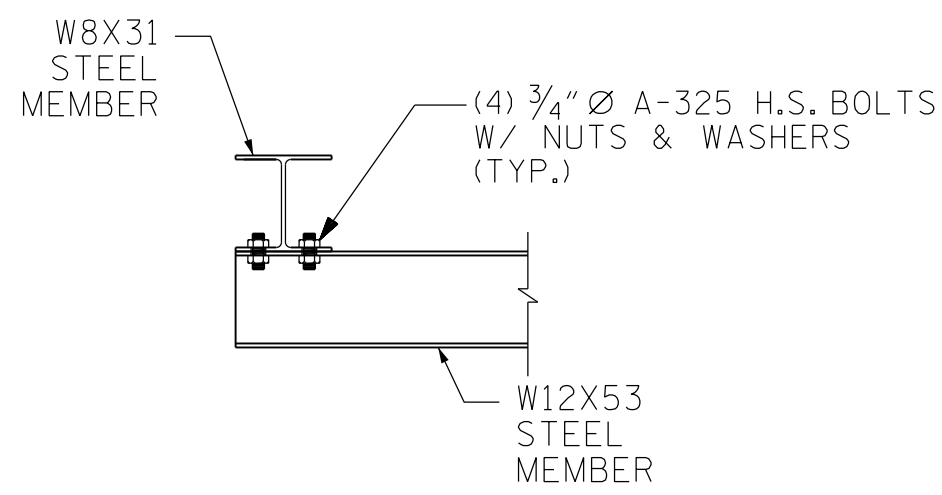
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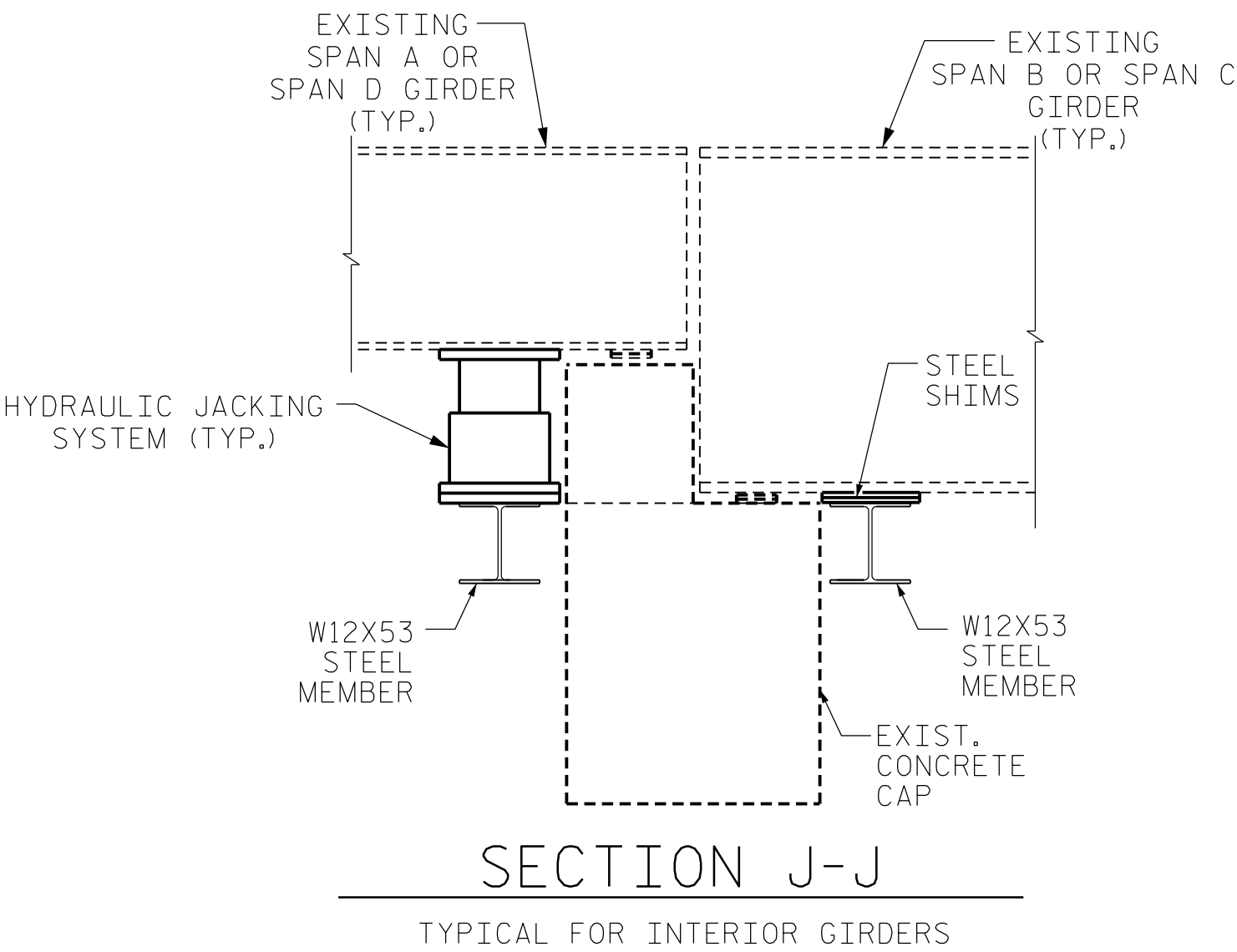
TYPICAL JACKING SADDLE PLAN



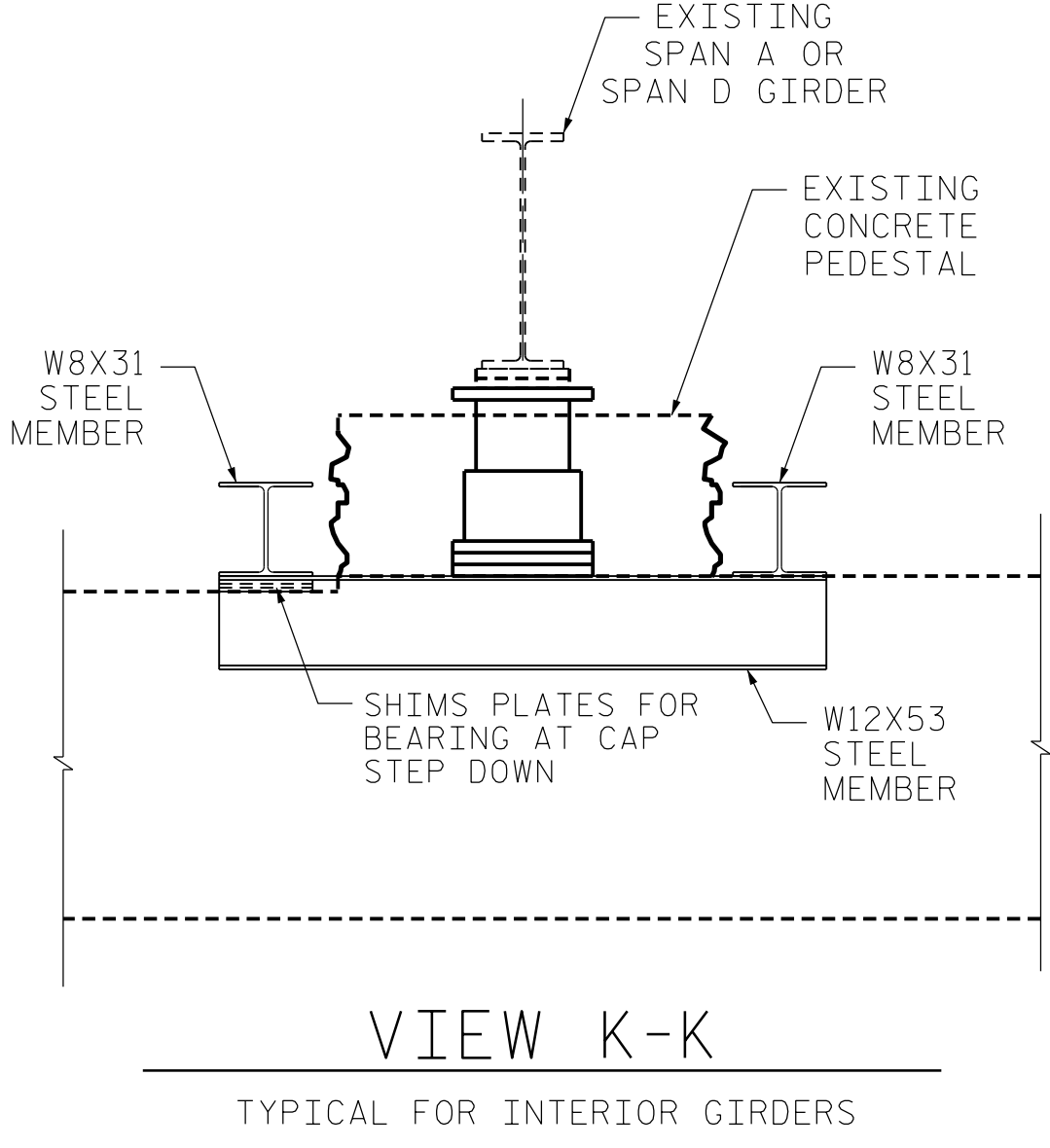
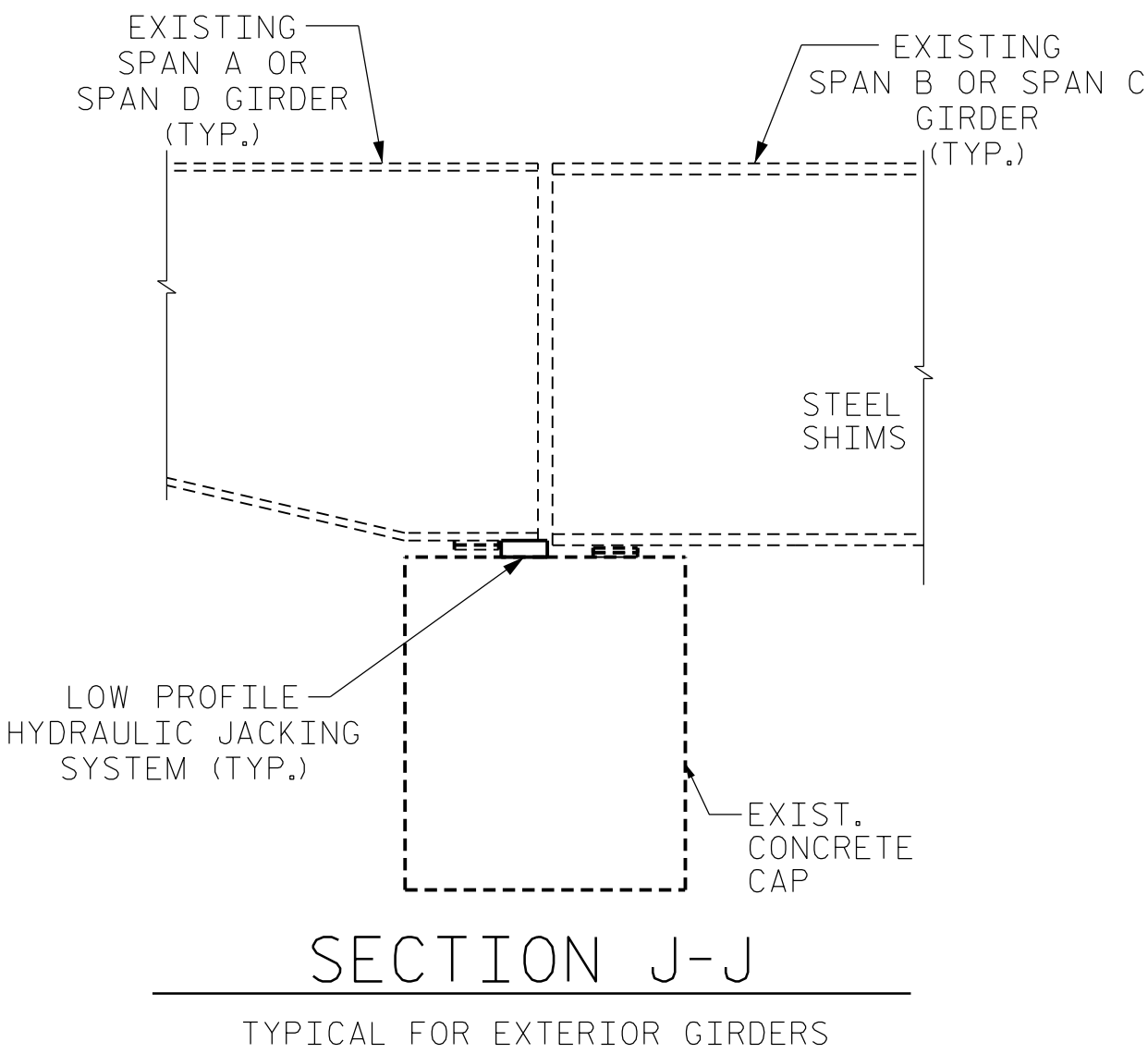
DETAIL "D"



SECTION L-L



TYPICAL JACKING SCHEMATIC



NOTES:

CONTRACTOR MAY USE ALTERNATE MEANS AND METHODS FOR JACKING OF EXISTING GIRDERS. IF ALTERNATE METHOD IS UTILIZED, CONTRACTOR SHALL SUBMIT PLANS AND DESIGN FOR APPROVAL. ALTERNATE JACKING DESIGN AND PLAN SUBMITTAL SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA.

ALL JACKS TO BE CONNECTED TO A MANIFOLD AS SHOWN IN JACKING SCHEMATIC TO ALLOW ALL GIRDERS TO BE JACKED EQUALLY AND SIMULTANEOUSLY.

JACKING SCHEMATIC SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL.

SPAN A AND SPAN D BEAMS TO BE RAISED A MAXIMUM OF 1/4".

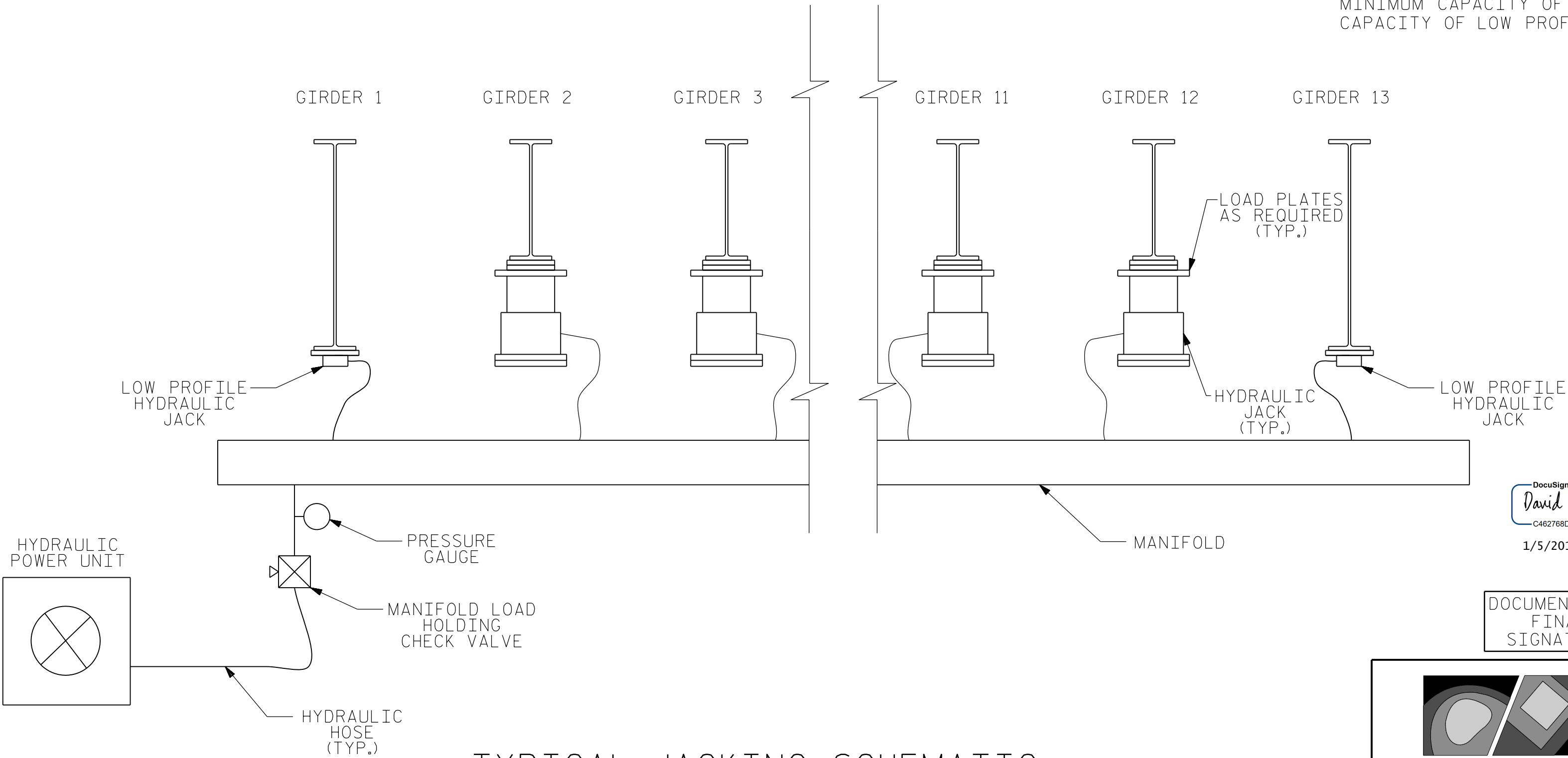
FOR GIRDERS 2 THRU 12, RUN LOCKING COLLARS DOWN ON EACH JACK TO HOLD SPAN IN RAISED POSITION. FOR GIRDERS 1 AND 13, INSTALL BLOCKING TO HOLD SPAN IN RAISED POSITION.

COMPLETE CONSTRUCTION OF NEW PEDESTALS AND INSTALLATION OF NEW BEARINGS.

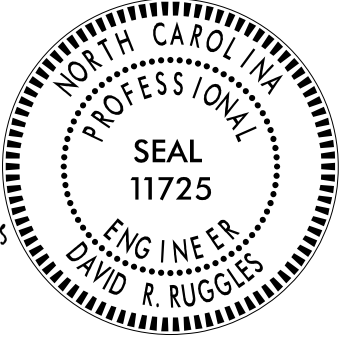
AFTER CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI, RESTORE HYDRAULIC PRESSURE TO JACKS AND RELEASE LOCKING COLLARS AT GIRDERS 2 THRU 12 AND REMOVE BLOCKING FROM GIRDERS 1 AND 13.

SLOWLY RELEASE JACK PRESSURE TO LOWER THE SPAN ON TO THE NEW SUPPORTS.

MINIMUM CAPACITY OF JACKS FOR GIRDERS 2 THRU 12 SHALL BE 73 KIPS. MINIMUM CAPACITY OF LOW PROFILE JACKS AT GIRDERS 1 AND 13 SHALL BE 76 KIPS.



DocuSigned by:  
David Ruggles  
C48278BDF412422  
1/5/2018



DOCUMENT NOT CONSIDERED  
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SIGNATURES COMPLETED



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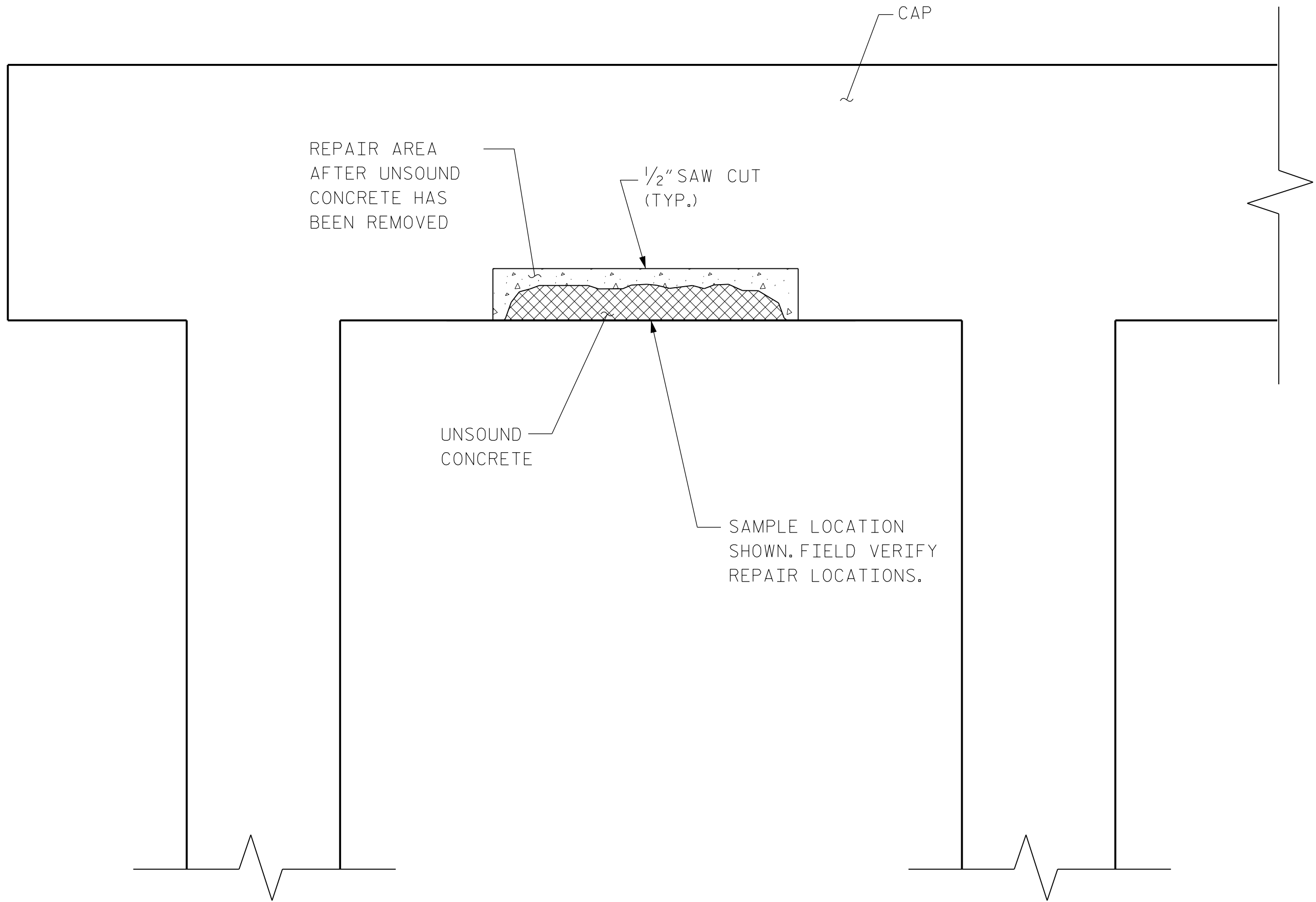
PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316  
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENTS 1 & 3  
BEARING DETAILS

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			





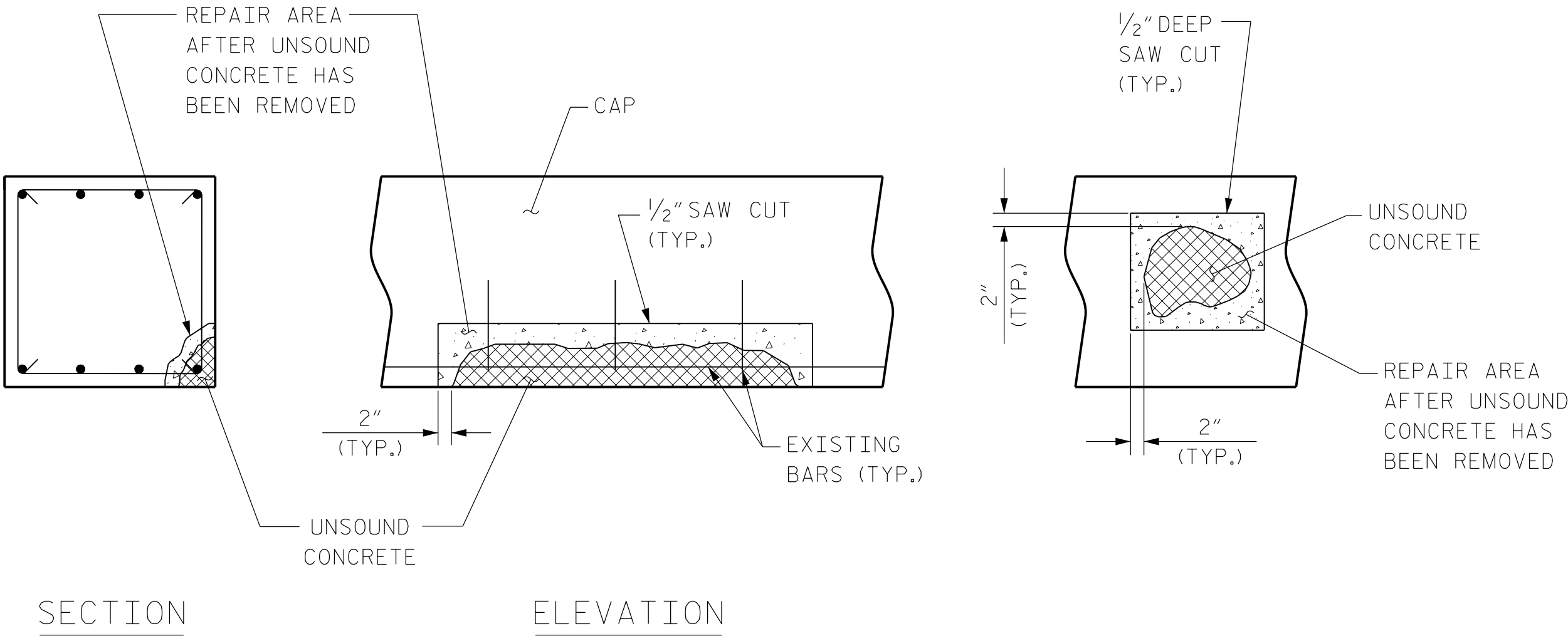
TYPICAL BENT REPAIR DETAIL

NOTE:

CONTRACTOR SHALL PERFORM A FIELD INSPECTION WITH ENGINEER TO ESTABLISH AREAS TO BE REPAIRED. REPAIR AREAS TO BE MARKED WITH FIELD PAINT.

ITEMS TO BE REPAIRED INCLUDE END BENTS, BENT CAPS, BENT COLUMNS, AND ANY OTHER ITEMS SPECIFIED BY THE ENGINEER.

BILL OF MATERIAL		
	SHOTCRETE REPAIRS	EPOXY RESIN INJECTION
	CU. FT.	LIN. FT.
END BENT 1	35	
BENT 1	35	
BENT 2	10	
BENT 3	80	
END BENT 2	0	
CONTINGENCY	40	125
TOTAL	200	125



CORNER REPAIR

FACE REPAIR

REPAIR SEQUENCE:

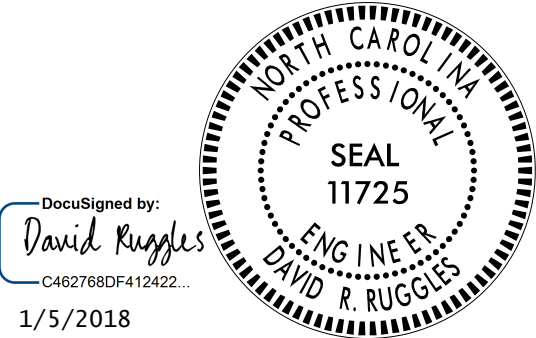
1. SOUND CONCRETE TO DETERMINE EXTENT OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF 1/2".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM 1/2" DEPTH. (PICTURE REQUIRED).
4. USE A WIRE BRUSH TO CLEAN ALL EXPOSED REINFORCING STEEL. FOR BARS WITH MORE THAN 10% SECTION LOSS SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.
5. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER. (PICTURE REQUIRED)
6. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. (PICTURE REQUIRED)

NOTE:

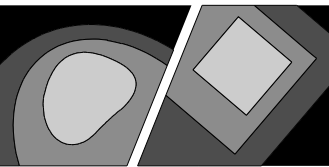
FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1/4" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND.

CAP REPAIR DETAILS AND PROCEDURE

PROJECT NO. 17BP.5.H.4  
WAKE COUNTY  
BRIDGE NO. 316



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DEPARTMENT OF TRANSPORTATION  
RALEIGH

CAP REPAIR  
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: E. PHELPS DATE : 06-17  
CHECKED BY: D. RUGGLES DATE : 09-17  
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 09-17

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	- -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	- - - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT.
		(MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED, DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. 17BP.5.H.4

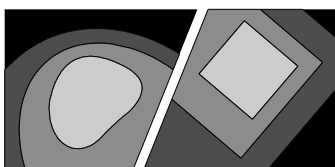
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